200

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TRADE NAME	MODEL	SET AND FOLDER No.
Airline	25BR-3058A, B, 25BR-3061A, 25BR-3067A, B, 25BR-3068A, B, 25BR-3069A Tel. Rec.	200-1
Arthur Ansley	R-1	200-2
Brociner	CA-2	200-3
Dukane	4C100	200-4
Fada	DL21T, 21C2, 21T, 24T2, 215C Tel. Rec.	200-5
Philco	53-950, 53-952, 53-954	200-6
Philco	53-958	200-7
Regency	RC-600 (TV UHF Conv.)	200-8
Stewart-Warner	21C-9211D, E, F, G (Series A, B, C), 21T-9211B (Series A, B), 21T-9211C (Series A, B, C) Tel. Rec.	200-9
Trad	T-1853, A Tel. Rec.	200-10
Truetone	D-2102A, B, D-2103A, B	200-11
Truetone	D-4118, B	200-12
Wilcox-Gay	3A10, 3A11 Recorder	200-13

PHOTOFACT* Folder

*TRADE MARK

AIRLINE MODELS 25BR-3058A, B, 25BR-3061A, 25BR-3067A, B, 25BR-3068A, B, 25BR-3069A

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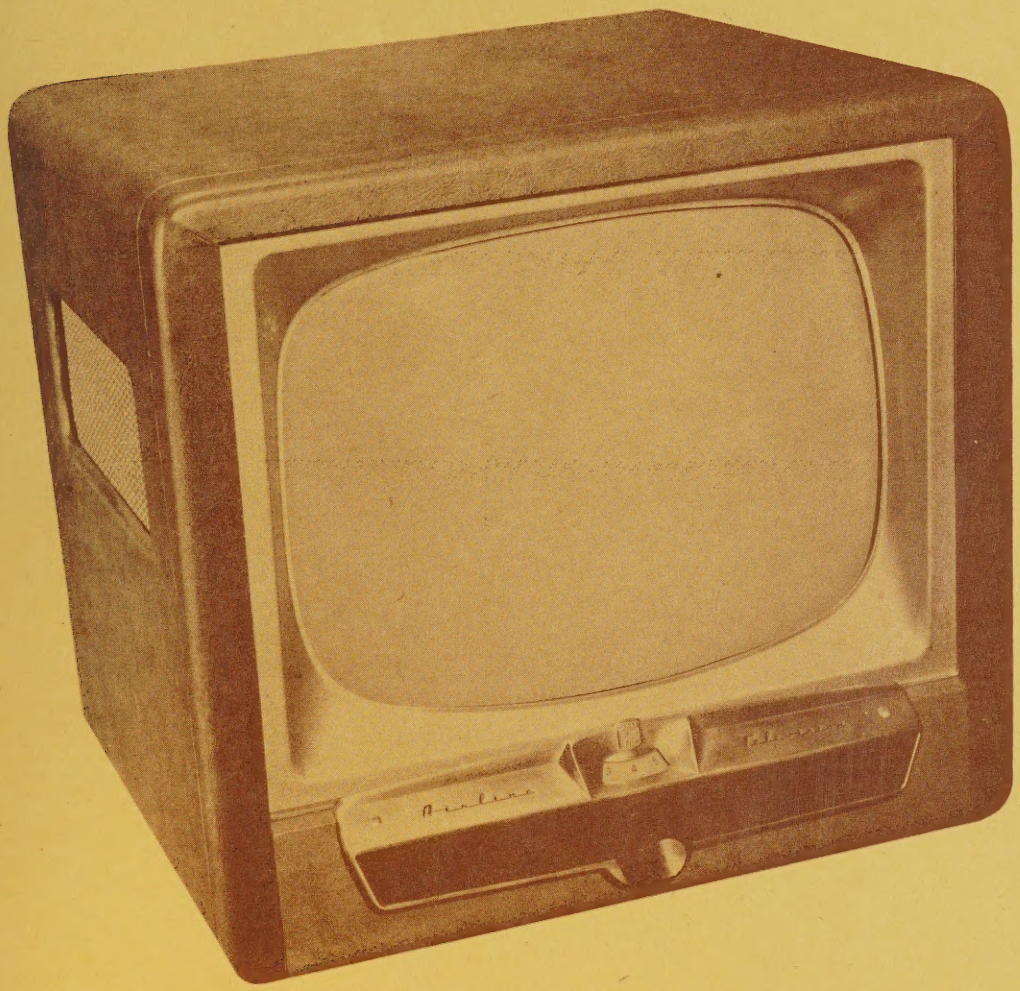

MODEL 25BR-3058B

AIRLINE MODELS 25BR-3058A, B, 25BR-3061A, 25BR-3067A, B, 25BR-3068A, B, 25BR-3069A

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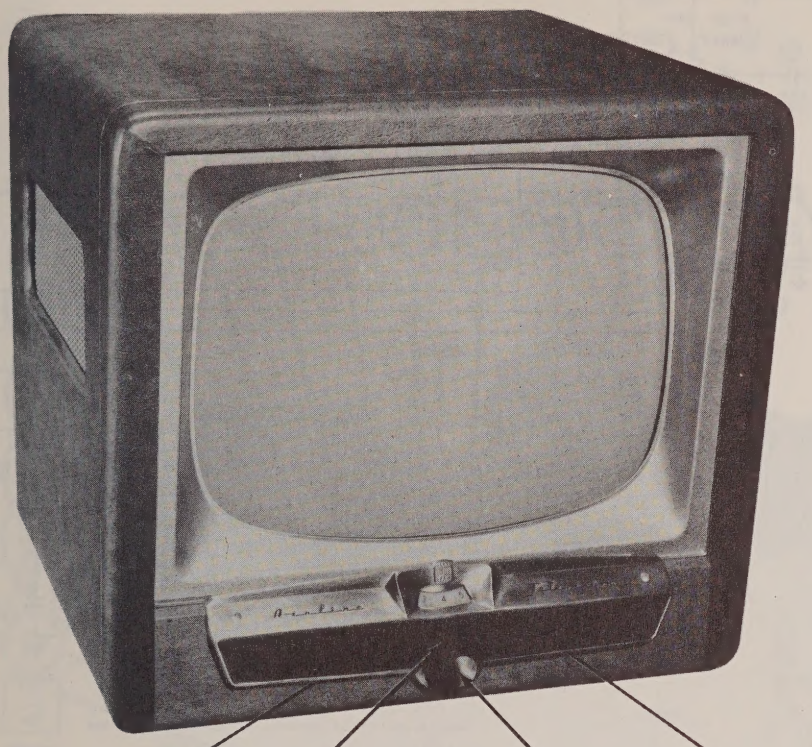
DATE 4-53 SET 200 FOLDER 1

AIRLINE MODELS 25BR-3058A, B, 25BR-3061A, 25BR-3067A, B, 25BR-3068A, B, 25BR-3069A



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AIRLINE MODELS 25BR-3058A, B, 25BR-3061A, 25BR-3067A, B, 25BR-3068A, B, 25BR-3069A

AIRLINE MODEL 25BR-3058B

TRADE NAME	Airline Models 25BR-3058A, B, 25BR-3061A, 25BR-3067A, B, 25BR-3068A, B, 25BR-3069A.
SUPPLIER	Montgomery Ward & Co, . 619 Chicago Ave., Chicago , Ill.
TYPE SET	Television Receiver
TUBES	Eighteen

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1.6 Amp. @ 117 Volts AC
TUNING RANGE— Channels 2 thru 13 (continuous tuning) Video IF 26.75MC, Sound IF 22.25MC.

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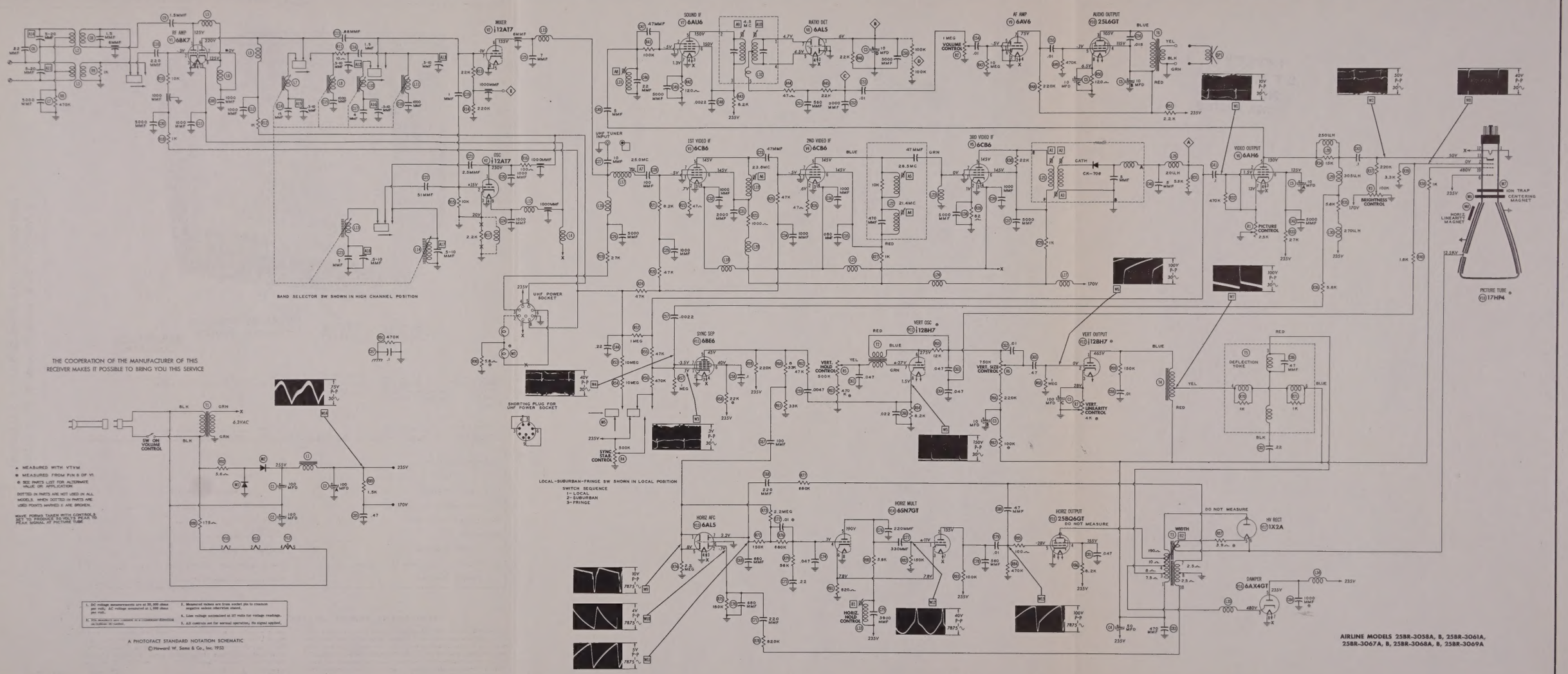
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
BAND SELECTOR SW SHOWN IN HIGH CHANNEL POSITION
UHF POWER SOCKET
SHORTING PLUG FOR UHF POWER SOCKET
LOCAL-SUBURBAN-FRINGE SW SHOWN IN LOCAL POSITION
SWITCH SEQUENCE
1- LOCAL
2- SUBURBAN
3- FRINGE
SW ON VOLUME CONTROL
A MEASURED WITH VTVM
* MEASURED FROM PIN 5 OF V1
© SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED # ARE BROKEN.
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 20,000 ohms per volt; AC voltage measured at 1,000 ohms per volt.
2. Measured values are from socket pin to common negative unless otherwise stated.
3. This receiver's sync polarity is a clockwise direction on button 'A' control.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.
DO NOT MEASURE
ION TRAP CENTERING MAGNET
HORIZ LINEARITY MAGNET
PICTURE TUBE V20 17HP4
BRIGHTNESS CONTROL
PICTURE CONTROL
VERT. LINEARITY CONTROL
VERT. HOLD CONTROL
VERT. SIZE CONTROL
HORIZ HOLD CONTROL
SYNC STAB. CONTROL
DEFLECTION YOKE
RF AMP V1 6BK7
MIXER V2 12AT7
OSC V3 12AT7
UHF TUNER INPUT
1ST VIDEO IF V5 6CB6
2ND VIDEO IF V4 6CB6
3RD VIDEO IF V5 6CB6
SOUND IF V7 6AU6
RATIO DET V8 6AL5
AF AMP V9 6AV6
AUDIO OUTPUT V10 25L6GT
VIDEO OUTPUT V6 6AH6
SYNC SEP V11 6BE6
VERT OSC V12 12BH7
VERT OUTPUT V12 12BH7
HORIZ AFC V13 6AL5
HORIZ MULT V14 6SN7GT
HORIZ OUTPUT V15 25BQ6GT
DAMPER V16 6AX4GT
HV RECT V17 1X2A
CK-708
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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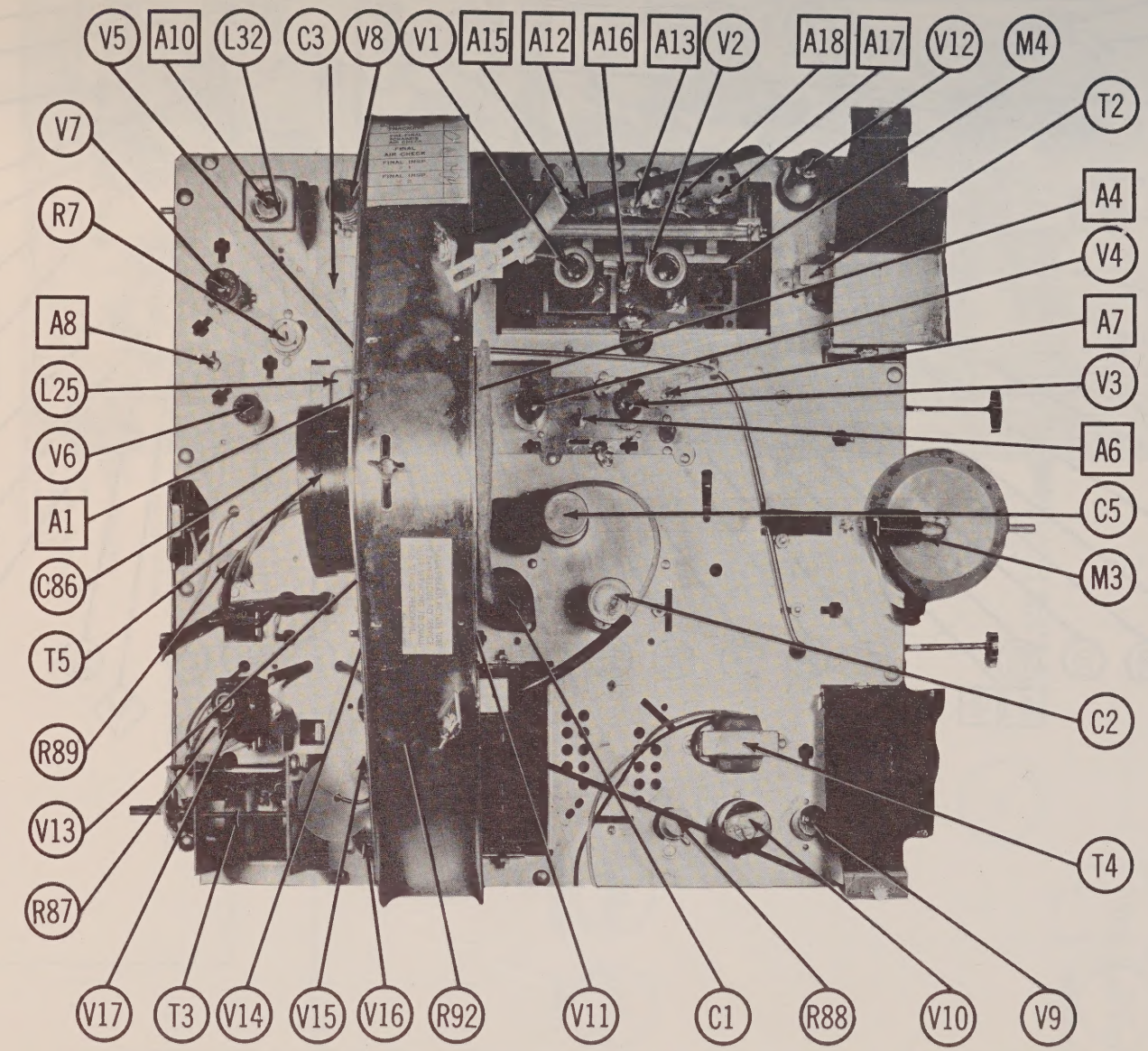
AIRLINE MODELS 25BR-3058A, B, 25BR-3061A, 25BR-3067A, B, 25BR-3068A, B, 25BR-3069A

AIRLINE MODELS 25BR-3058A, B, 25BR-3061A, 25BR-3067A, B, 25BR-3068A, B, 25BR-3069A



CHASSIS TOP VIEW

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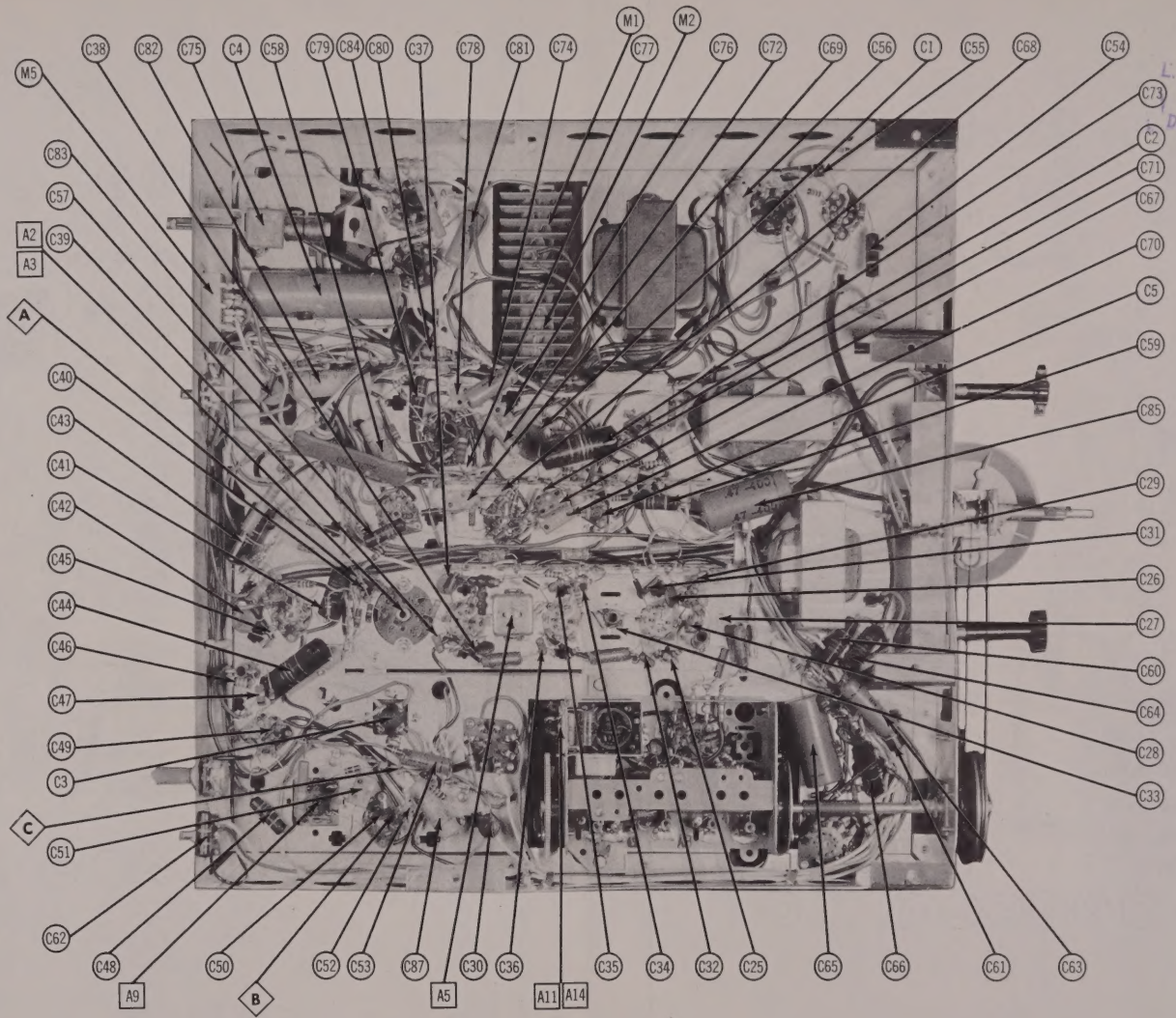
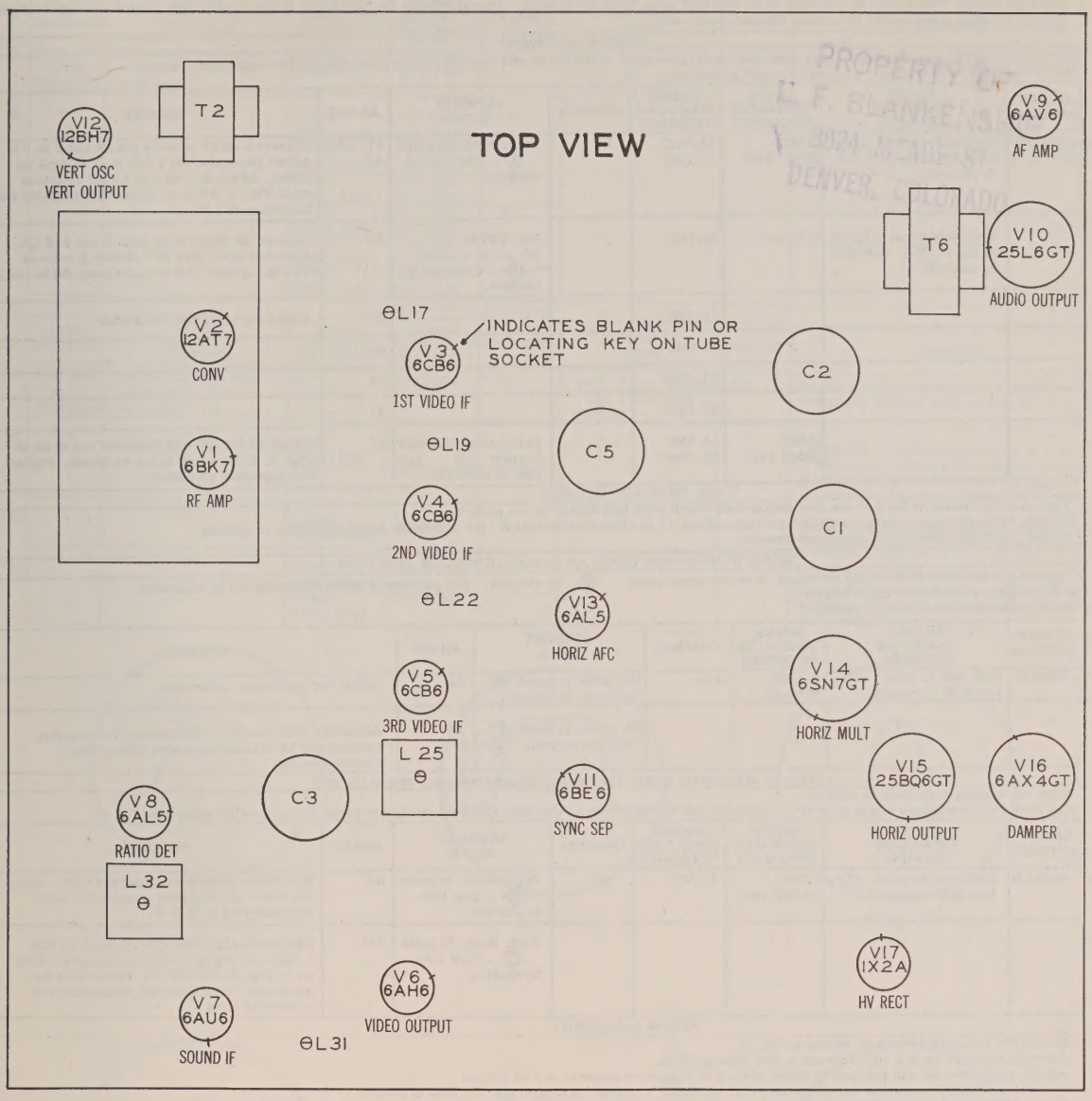


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-Sel. Rect. (M1 & M2)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V6, V18
Has pic, no sound-V7, V8, V9, V10

SYNC FAILURE
No vert. sync. -V11, V12
No horiz. sync. -V11, V13, V14
No vert. or horiz. sync. -V11

SWEEP FAILURE
No raster, has sound-V14, V15, V16, V17, V18
No vertical deflection-V12
Poor vert. linearity or foldover -V12
Poor horiz. linearity or foldover-V14, V15, V16
Narrow picture-V14, V15, V16, V17, M1, M2
Vert. off freq. -V11, V12
Horiz. off freq. -V11, V13, V14

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator tube disable the high voltage. Use an isolation transformer to protect the test equipment.

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Set Fringe-Local-Suburban switch to "Fringe" position.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 1 (grid) of 6CB6 (V5). Low side to chassis.	25MC (10MC Swp)	23.5MC 26.2MC	13	Vert. Amp. to point Ⓐ. Low side to chassis.	A1, A2, A3	Connect a short between pins 5 and 6 of V4. Adjust generator for 1 volt peak to peak on scope. Adjust A1, A2 and A3 for response as in Fig. 1. A3 is an adjustable coupling rod on bottom of L25.
2.	"	High side to pin 7 (grid) of 12AT7 (V2). Low side to chassis.	Not used	21.4MC	"	Use VTVM. DC probe to point Ⓐ. Common to chassis.	A4	Remove the short from pins 5 and 6 of L4. Attenuate generator to maintain 2 volts at VTVM. Adjust A4 for maximum deflection.
3.	"	"	"	26.5MC	"	"	A5	Adjust for maximum deflection.
4.	"	"	"	21.4MC	"	"	A4	"
5.	"	"	"	23.8MC	"	"	A6	"
6.	"	"	"	25.0MC	"	"	A7	"
7.	"	"	25MC (10MC Swp)	23.5MC 26.75MC	"	Vert. Amp. of scope to point Ⓐ. Low side to chassis.	A1	Adjust A1 for flat-top response curve as in Fig. 2. If response is not as shown, repeat the alignment procedure.

4.5MC TRAP ADJUSTMENT

Tune in a TV station and adjust the fine tuning until sound bars just appear in the picture.
Starting from extreme counter clockwise position adjust A8 in clockwise direction for minimum sound indication in picture.
Do not adjust for maximum sound from speaker.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point Ⓑ to chassis. The junction of these two resistors is alignment point Ⓓ as shown on the schematic.
Short the antenna terminals to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.001MFD	High side to point Ⓐ. Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point Ⓑ. Common to chassis.	A9	Adjust for maximum deflection.
9.	"	"	"	"	DC probe to point Ⓒ. Common to point Ⓓ.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Short the antenna terminals to chassis.
Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.001MFD	High side to point Ⓐ. Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point Ⓑ. Low side to chassis.	A9	Disconnect stabilizer capacitor C3D. Adjust for curve of maximum amplitude and symmetry as in Fig. 3.
9.	"	"	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A10	Reconnect capacitor C3D. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

Preset the trimmer screws as shown in Fig. 5.
Turn the tuner to the top of its stroke in low band position.
Adjust coil cores so that bottoms of cores are 1.6 inches above bottoms of coil forms.
Connect a .001MFD capacitor across scope input terminals and 10KΩ in series with hot lead of scope.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

LOW BAND RF ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC Swp)	83.25MC 87.75MC	6	Vert. Amp. to point Ⓔ. Low side to chassis.	A11, A12 A13	Adjust for maximum response as in Fig. 6.
11.	"	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"		Check for response similar to Fig. 6. If necessary retouch A12 and A13 for nearest approach to Fig. 6 on all low band channels.
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

ALIGNMENT INSTRUCTIONS (CONT.)

HIGH BAND RF ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (E). Low side to chassis.	A14, A15 A16	Adjust for maximum response as in Fig. 6.
13.	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"		Check for response similar to Fig. 6. If necessary retouch A15 and A16 for nearest approach to Fig. 6 response on all high band channels.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			

OSCILLATOR ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC Swp)	83.25MC	6	Vert. Amp. to point (A). Low side to chassis.	A17	Adjust to place video marker at 50% on low frequency slope of response as in Fig. 7.
15.	"	"	69MC (10MC Swp)	67.25MC	4	"		Check for marker placement as in Fig. 7. If necessary make slight compromise adjustment of A17 for best marker placement across low band channels.
			57MC (10MC Swp)	55.25MC	2			
16.	"	"	213MC (10MC Swp)	211.25MC	13	"	A18	Adjust to place video marker at 50% on low frequency slope of response as in Fig. 7.
17.	"	"	195MC (10MC Swp)	193.25MC	10	"		Check for marker placement as in Fig. 7. If necessary make slight compromise adjustment of A18 for best marker placement across high band channels.
			177MC (10MC Swp)	175.25MC	7			

FIG 1

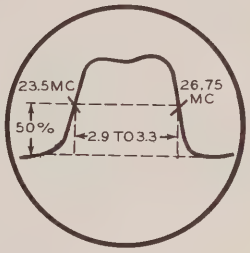


FIG. 2

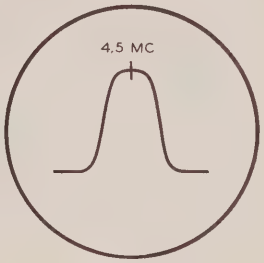


FIG. 3

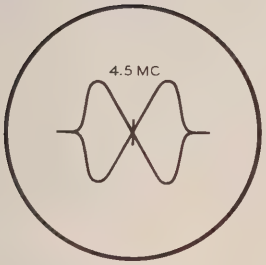


FIG. 4

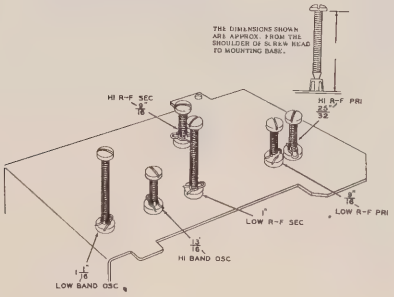

THE DIMENSIONS SHOWN ARE APPROX. FROM THE SHOULDER OF SCREW HEAD TO MOUNTING BASE.
HI R-F SEC
HI R-F PRI
LOW R-F SEC
LOW R-F PRI
HI BAND OSC
LOW BAND OSC
FIG 5

FIG 6

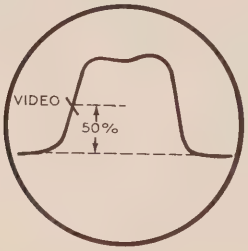


FIG. 7

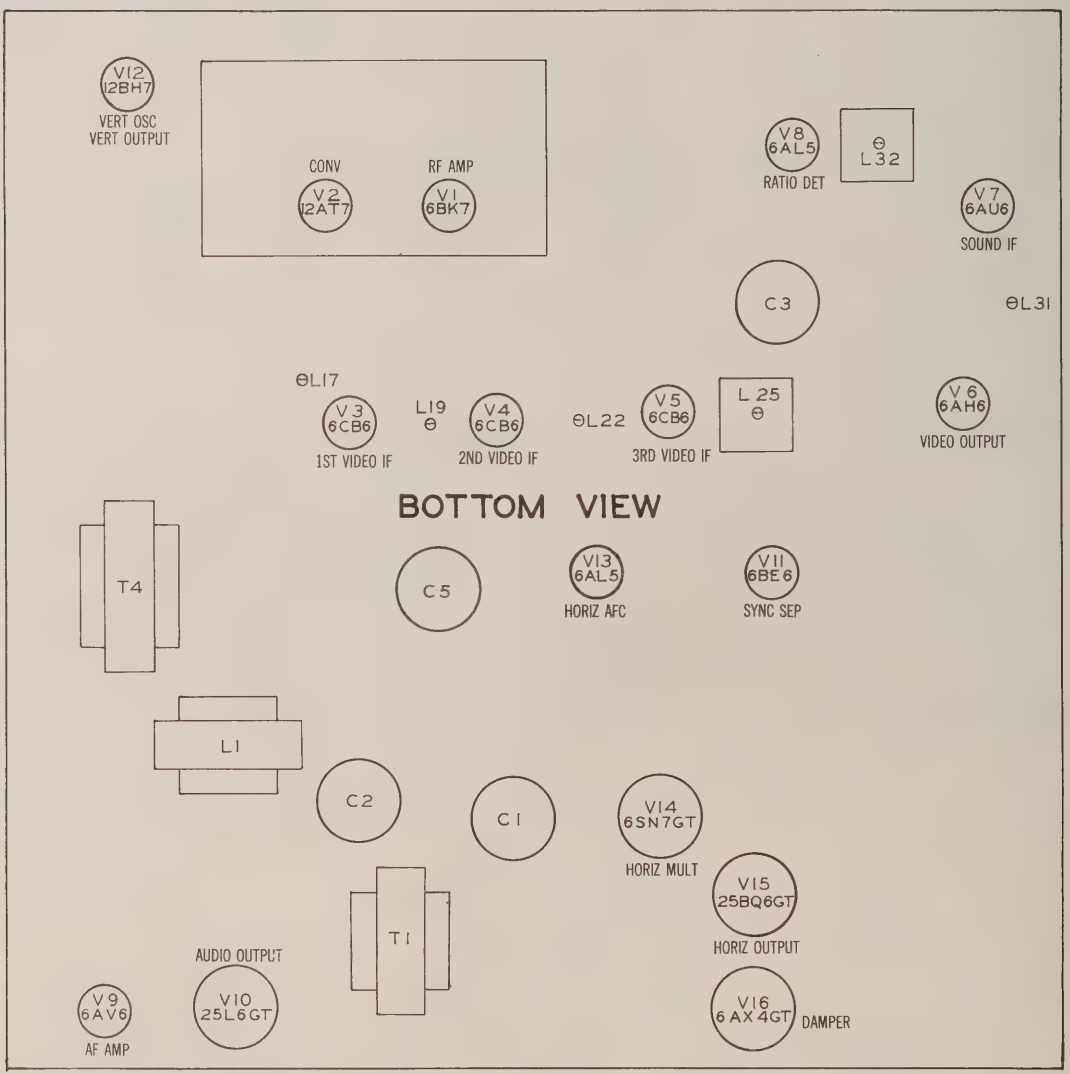
PROPERTY OF

AIRLINE MODELS 25BR-3058A, B, 25BR-3061A, 25BR-3067A, B, 25BR-3068A, B, 25BR-3069A

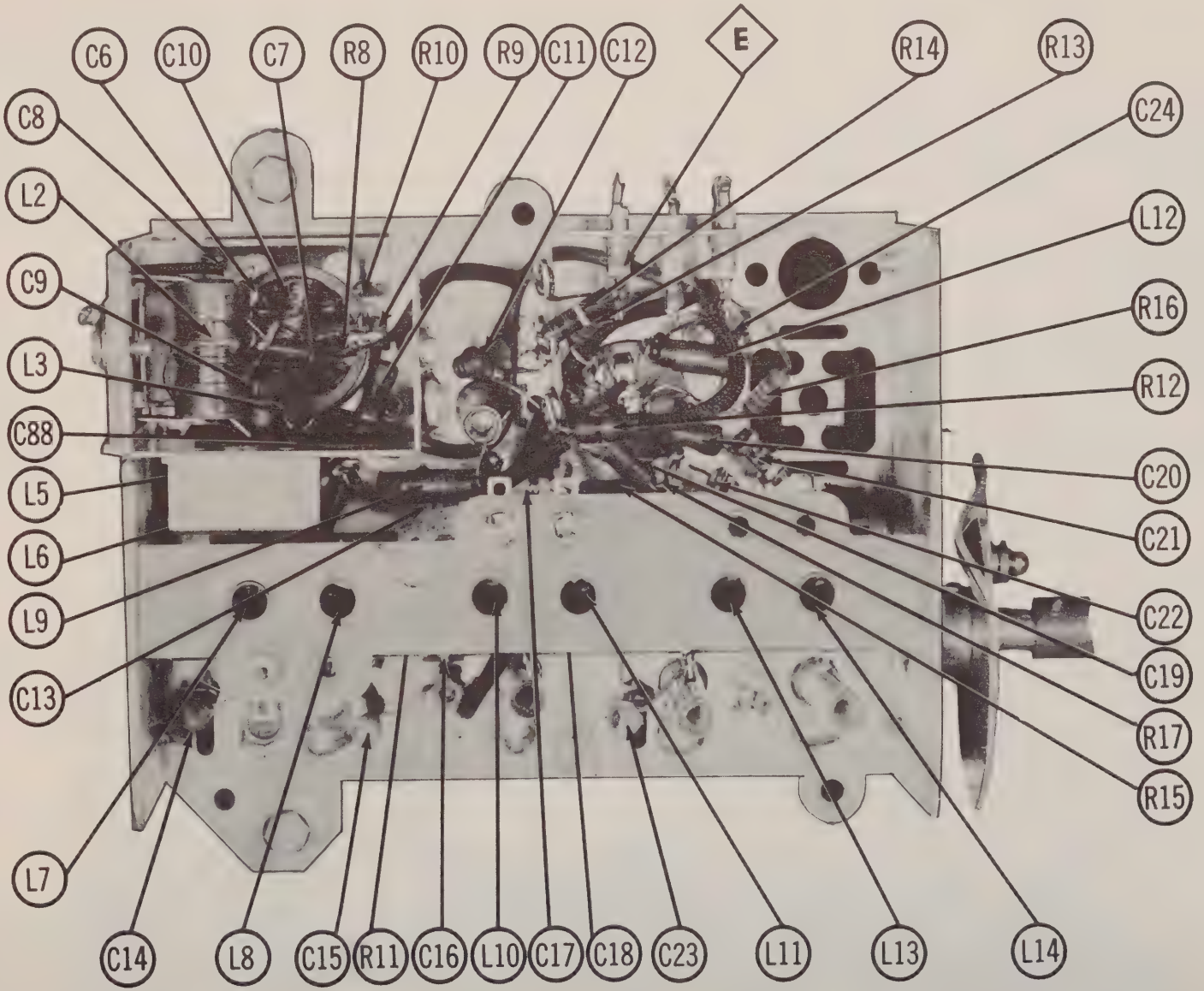
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BK7	INF	1.1Meg	0Ω	0Ω	.1Ω	†1.1KΩ	INF	INF	0Ω
V 2	12AT7	†170Ω	12KΩ	2.2KΩ	0Ω	0Ω	†27KΩ	240KΩ	0Ω	.1Ω
V 3	6CB6	1.1Meg	47Ω	0Ω	.1Ω	†2.6KΩ	†2.6KΩ	0Ω		
V 4	6CB6	1.1Meg	47Ω	0Ω	.1Ω	†2.6KΩ	†2.6KΩ	0Ω		
V 5	6CB6	2.2Ω	82Ω	0Ω	.1Ω	†2.6KΩ	†2.6KΩ	0Ω		
V 6	6AH6	470KΩ	600Ω	.1Ω	0 Ω	†5.7KΩ	†27KΩ	600Ω		
V 7	6AU6	100KΩ	0Ω	.1Ω	0Ω	†8.3KΩ	†8.3KΩ	120Ω		
V 8	6AL5	22KΩ	0Ω	.1Ω	0Ω	INF	0Ω	INF		
V 9	6AV6	10 Meg	0Ω	0Ω	.1Ω	0Ω	0Ω	†222KΩ		
V 10	25L6GT	INF	■26Ω	†2.5KΩ	†2.3KΩ	470KΩ	INF	■16Ω	120Ω	
V 11	6BE6	50KΩ	0Ω	0Ω	.1Ω	†75KΩ	†22KΩ	1 Meg		
V 12	12BH7	#1.1KΩ	1 Meg	3.3KΩ	■6Ω	50KΩ	#1.1KΩ	750KΩ	8.2KΩ	■3Ω
V 13	6AL5	2.2Meg	150KΩ	.1Ω	0Ω	2.2Meg	0Ω	4.5Meg		
V 14	6SN7GT	150KΩ	†100KΩ	820Ω	5 Meg	†5.7KΩ	820Ω	.1Ω	0Ω	
V 15	25BQ6GT	INF	■16Ω	INF	†8.3KΩ	470KΩ	INF	■6Ω	0Ω	Top Cap #12Ω
V 16	6AX4GT	INF	#2.2Ω	3.5Meg	2.5Ω	†73Ω	†71Ω	.1Ω	0Ω	
V 17	1X2A	PINS 1 - 9 HAVE INF RESISTANCE								Top Cap #12Ω
V 18	17HP4	0Ω	3.3KΩ	Pin 6 †71Ω	Pin 10 #1KΩ	Pin 11 †270KΩ	Pin 12 .1Ω			

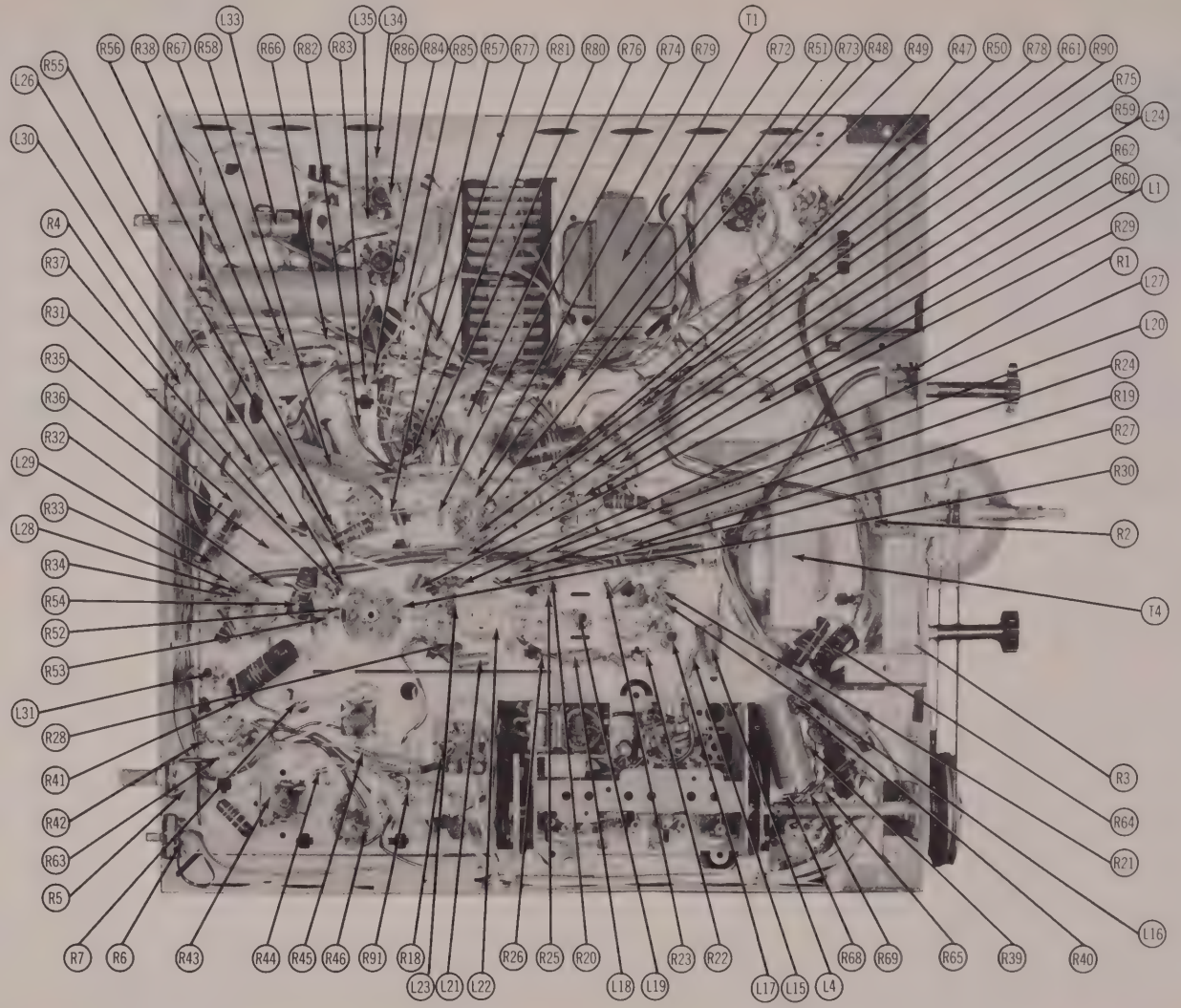
† MEASURED FROM OUTPUT OF M2.
# MEASURED FROM PIN 3 OF V16.
■ MEASURED FROM PIN 5 OF V12.



TUBE PLACEMENT CHART



RF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustments of RF Tuner oscillator adjustments, it is necessary to remove the chassis from the cabinet. (See Disassembly Instructions).

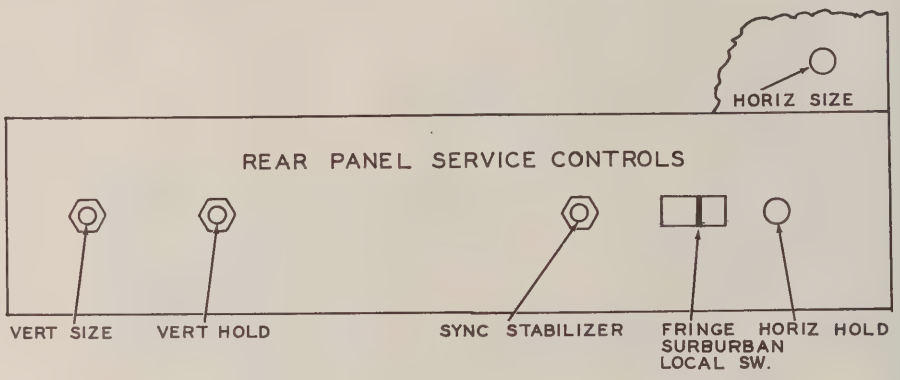
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove two push on type control knobs. Remove escutcheon by removing four phillips head screws. Remove safety glass by pulling out and down. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS - SYNC STABILIZER ADJUST CONTROL

This control should be adjusted to the position which results in the most stable synchronization.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjust the horizontal hold control until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector Buzz, adjust the Ratio Detector Secondary (L32) located on top of chassis. (See tube placement chart).

FUSES

There are no fuses. A fusible resistor (R92) is used for LV power supply protection.

CENTERING

Centering is accomplished mechanically by adjusting a magnetic ring around the neck of picture tube located flush against the yoke. Turn the disc and at the same time rotate the ring around the tube until picture is properly centered.

BUILT-IN-ANTENNA TUNING

The built-in antenna can be adjusted from the rear of the cabinet.

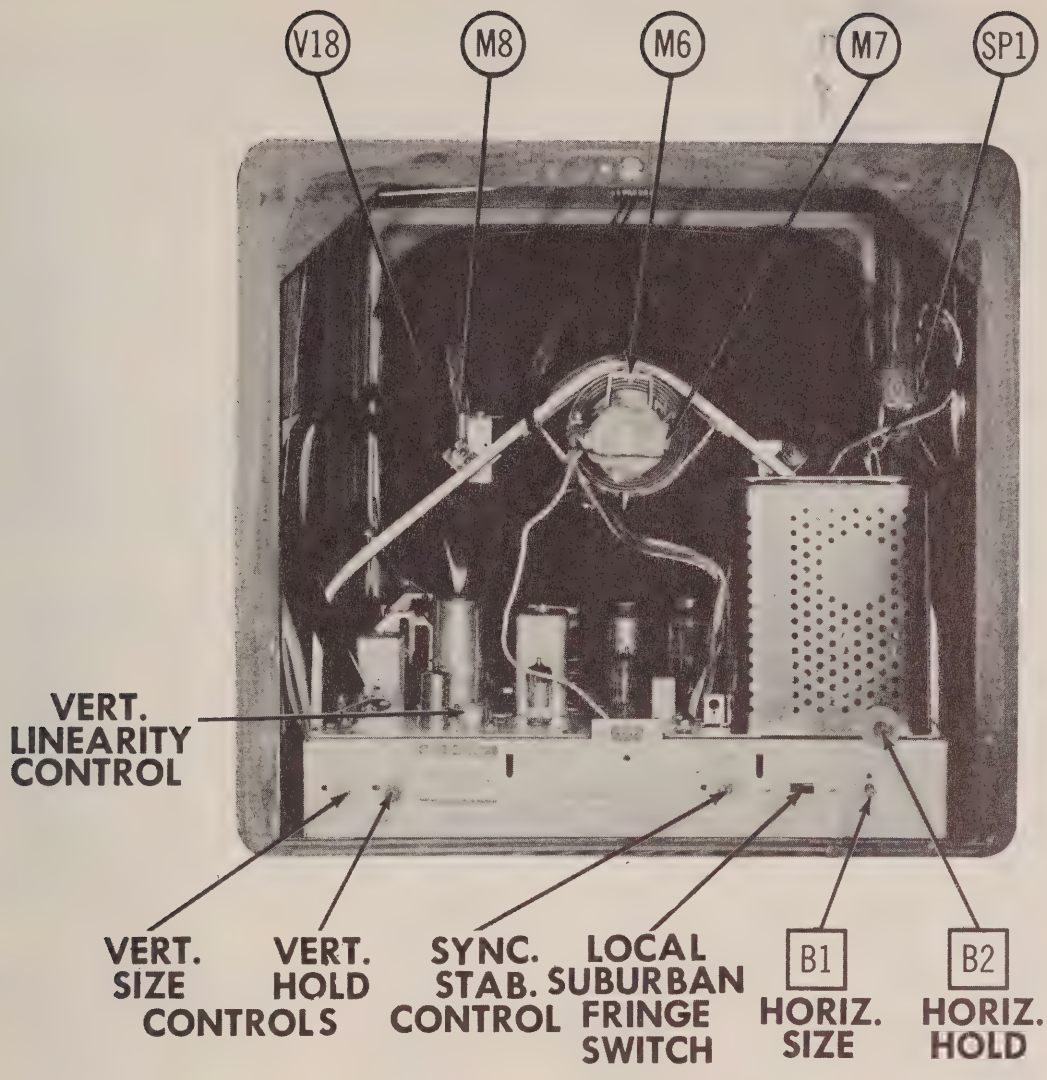
Adjust for a picture of maximum contrast and minimum ghosts.

HORIZONTAL LINEARITY MAGNET

Adjust the position of the horizontal linearity magnet (located near the neck of the picture tube) for best linearity at the right hand side of the picture. (17" Models only)

ANTI-PIN CUSHION CORRECTION

Reduce the picture size so that the sides of the raster are visible, and position the magnets so that all sides are straight lines and the corners are at right angles.



CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

1. Remove 2 push on type control knobs from front panel.
2. Disconnect built-in antenna.
3. Remove 2 screws. Remove antenna from rear cover.
4. Remove 4 wood and 1 metal screws. Remove rear cover.
5. Disconnect speaker. Remove 2 speaker nuts. Remove speaker.
6. Remove 6 chassis bolts. Remove chassis.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIR LINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier	6BE7	6BE7	9AJ	
V2	Converter	12AT7	12AT7	9A	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	6AH6	6AH6	7BK	
V7	Sound IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Detector	6AL5	6AL5	6BT	
V9	AF Amplifier	6AV6	6AV6	7BT	
V10	Audio Output	25L6GT	25L6GT	7B	
V11	Sync Separator	6BE6	6BE6	7CH	
V12A	Vert. Oscillator-Vert. Output	12BH7	12BH7	9A	Model 25BR-3058B only
B	Vert. Oscillator-Vert. Output	12BN7GT	12BN7GT	9BD	All Models except 25BR-3058B
V13	Horiz. AFC	6AL5	6AL5	6BT	
V14	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V15	Horiz. Output	25BQ6GT	25BQ6GT	6AM	
V16	Damper	6AX4GT	6AX4GT	4CG	
V17	HV Rectifier	1X2A	1X2A	9Y	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: AIR LINE PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V18A	17HP4	17HP4	12C	
B	21EP4A	21EP4A	12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR LINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	100	150	8C-20709			XA003		FP116	TVL-1423	
C2	100	150	8C-20884	AFHB1-69		XA003		FP116	TVL-1423	
C3A	▲100	200	8C-20868	AFHJ-102					TVL-4638	
B	▲10	400		PRS25/100						
C	100	25								
D	▲10	75								
C4	50	300	8C-21274	PRS450/50		BR5035		TC88	TVA-1713	
C5A	▲10	300	8C-20954	AFHJ-124		CQ21		FP330.5	TVL-3580	
B	▲10	300								
C	10	15								
C6	22		8G-11892				N750K-220			
C7	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C8	1.5		8G-12495-8	SIL.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCC-V15	
C9	1.5		8G-12495-8	SIL.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCC-V15	
C10	220		8G-16045	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C11	1000		8G-13201	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C12	1000		8G-13201	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C13	.68		8G-12495-1		TCZ-.68		NP0K-R68			
C14	15		8G-13017	SI15NP0	TCZ-15		NP0K-150	ZT-5415	5TCC-Q15	
C15	1000		8G-13201	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C16	1.5		8G-12495-8	SIL.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCC-V15	
C17	4		8G-16044				NP0K-040			
C18	1000		8G-13201	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C19	1		8G-12495-2		TCZ-1		NP0K-010		5TCCB-V1	
C20	1000		8G-13201	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C21	2.5		8G-19568							
C22	51		8G-11891							
C23	7		8G-15234				NP0K-150		5HK-D1	
C24	1000		8G-13201	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C25	7		8G-15234							
C26	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C27	10		8G-11789	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C28	100	500	8F3-8	1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C29	1000		8G-13201	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C30	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C31	2000		8G-19522	SI2000	D6-202	TM5D2	GP2-333-202	UC-522	5HK-D2	
C32	1000		8G-13201	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C33	47		8G-19731	BPD-000047	D6-470		GP1K-470	UC-5447	5GA-Q47	
C34	1000		8G-13201	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C35	680		8G-21105	SI680	D6-681		GP2K-681	UC-5368	5GA-T68	
C36	1000		8G-13201	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C37	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C38	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C39	1000		8G-13201	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C40	5		8G-12166	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C41	.1	200	8J-16085	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C43	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C43	.1	400	8J-16083	P288-1	DF-104	PTE4P1		PT401	4TM-P1	
C44	.22	200	8J-16082	P288-22		PJ2P22		PT4025	2TM-P22	
C45	5		8G-12166	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C46	22		8G-13909		TCZ-22		NP0K-220		5TCC-Q22	
C47	47		8G-12196	SI47NP0	TCZ-47		NP0K-470	ZT-5447	5TCC-Q47	
C48	.0022	400	8J-20634	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C49	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C50	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C51	560	500	8F3-122							
C52	5000		8G-21207	SI5000	D6-502	TM5D5	GP2-333-502	UC-525	5HK-D5	
C53	.01	200	8J-20582	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C54	.01	400	8G-20582	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C55	.01	400	8J-16084	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C56	.015	400	8J-20594	P688-015		PTE6S15		PT6215	6TM-S15	
C57	.0022	400	8J-20590	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C58	.1	400	8J-16083	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C59	.0047	400	8J-20592	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C60	.022	200	8J-16086	P688-022	DF-303	PTE6S22		PT4123	4TM-S22	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR LINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C61	.047	200	8J-16096	P288-047			PTE4S47		2TM-S47	
C62	.01	400	8J-16084	P488-01	D6-103		PTE4S1	GP2-333-103	PT411	4TM-S1
C63	.047	400	8J-16091	P488-047	DF-503		PTE4S47		PT4147	4TM-S47
C64	.047	200	8J-16096	P288-047	DF-503		PTE4S47		PT4147	2TM-S47
C65	.47	400	8J-21505	485-5			P4KP5		PT405	2TM-P47
C66	.01	800	8J-16097	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C67	100	500	8F3-113	1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C68	220	500	8F3-117	1479-00025		5R5T25		MCB240		
C69	680	500	8F3-123	1479-0007		5R5T7			M3-37	
C70	680	500	8F3-123	1479-0007		5R5T7			M3-37	
C71	220	500	8F3-117	1479-00025		5R5T25		MCB240		
C75	.01	200	8J-20582	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	Note 1
C73	.22	200	*J-16082	P488-22		PTE4P22		PT405	2TM-P22	
C74	.047	200	8J-16096	P288-047		PTE4S47		PT4147	2TM-S47	
C75	3900	500	8J-20613	1464-004		IDR5D4		MCB463	MB-24	
C76	220	500	8F3-117	1479-00025		5R5T25		MCB240		
C77	330	500	8F3-118	1479-00035						
C78	560	500	8F3-122							
C79	.01	400	8J-16084	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C80	47		8G-12196	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C81	.047	400	8J-16091	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C82	.22	200	8J-16082	P488-22		PTE4P22		PT4025	2TM-P22	
C83	470	1000	8G-21440					MCK347	10GA5-T47	
C84	1000		8G-19505	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	Note 2
C85	.47	400	8J-21505	485-5		P4KP5		PT405	2TM-P47	
C86	47		8G-12198	SI47NT50	TCN-47		N750K-470	NT-5447	5TCU-Q47	
C87	.1	400	8J-16083	P488-1		PTE4P1		PT401	4TM-P1	
C88	1000		CG-19505	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	

Note 1. Models 25BR-3087A and 25BR-3068A use 5000MMF in this application (Part #8G-13962)
Note 2. Not used in Models 25BR-3067A and 25BR-3068A.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2500Ω	½	A-10B-21478	Q17-111	AG-15-8	AB-7	U-8	Picture
B	Shaft		Not Req.	Not Req.	KBS-3	AK-4	Not Req.	Attach to R1A
R2A	1 Meg	½	A-10A-21484		AG-63-Z		U-53	Volume
B	Shaft		Not Req.		FS-5		DS-36	Attach to R2A
C	Switch		Not Req.		SWB		US-36	Attach to R2A
R3A	100KΩ	½	A-10B-17275	QU-128	AG-49-S	AB-40	U-41	Brightness
B	Shaft		Not Req.	Not Req.	KBS-3	AK-4	Not Req.	Attach to R3A
R4A	500KΩ	½	A-10B-20558	QU-133	AG-58-S	AB-59	U-50	Sync. Stabilizer
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	500KΩ	½	A-10B-20558	QU-133	AG-58-S	AB-59	U-50	Vert. Hold
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	750KΩ	½	A-10B-19220	QU-136	A G-61-S	AB-69	U-51	Vert. Size
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7	4000Ω	1	A-10B-21052					Vert. Linearity-Wire Wound-See Note

Note. This control has a minimum resistance of 1000Ω.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R8	470KΩ	½	9B1-29		
R9	1000Ω	½	9B1-62	BTS-1000	
R10	10KΩ	½	9B1-74	BTS-10K	
R11	10Ω	½	9B1-38		
R12	1000Ω	½	9B1-13	BTS-1000	
R13	22KΩ	½	9B1-78		
R14	220KΩ	½	9B1-27		
R15	10KΩ	½	9B1-74	BTS-10K	
R16	100Ω	½	9B1-50	BTS-100	
R17	2200Ω	½	9B1-66	BTS-2200	
R18	1000Ω	½	9B1-62	BTS-1000	
R19	27KΩ	1	9B2-79	BTA-27K	
R20	47KΩ	1	9B1-82	BTS-47K	
R21	8200Ω	½	9B1-73		
R22	47Ω	½	9B1-46		
R23	1000Ω	½	9B1-13	BTS-1000	
R24	47KΩ	½	9B1-82	BTS-47K	
R25	47KΩ	½	9B1-82		
R26	47Ω	½	9B1-46		
R27	1000Ω	½	9B1-13	BTS-1000	
R28	82Ω	½	9B1-49	BTS-82	
R29	1000Ω	½	9B1-13	BTS-1000	
R30	22KΩ	½	9B1-78	BTS-22K	
R31	5600Ω	½	9B1-71	BTS-5600	
R32	470KΩ	½	9B1-94	BTS-470K	
R33	27KΩ	1	9B2-79	BTA-27K	
R34	15KΩ	½	9B1-76	BTS-15K	
R35	56000Ω	2	9B4-71	BTU-56000	
R36	5600Ω	½	9B1-71	BTS-5600	
R37	220KΩ	½	9B1-90	BTS-220K	
R38	1000Ω	½	9B1-62	BTS-1000	
R39	3300Ω	½	9B1-68	BTS-3300	
R40	1800Ω	½	9B1-65	BTS-1800	
R41	100KΩ	½	9B1-86	BTS-100K	
R42	120Ω	½	9B1-51	BTS-120	
R43	8200Ω	2	9B4-73	BTB-8200	
R44	47Ω	½	9B1-46		
R45	22KΩ	½	9B1-78	BTS-22K	
R46	22KΩ	½	9B1-78	BTS-22K	
R47	10Meg	½	9B1-110	BTS-10 Meg	
R48	220KΩ	½	9B1-90	BTS-220K	
R49	470KΩ	½	9B1-94	BTS-470K	
R50	120Ω	1	9B2-51	BTA-120	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R51	2200Ω	5	9C12-1103	1 3/4A-2250	
R52	1 Meg	½	9B1-98	BTS-1 Meg	
R53	10 Meg	½	9B1-110	BTS-10 Meg	
R54	10 Meg	½	9B1-110	BTS-10 Meg	
R55	47KΩ	½	9B1-82	BTS-47K	
R56	470KΩ	½	9B1-94	BTS-470K	
R57	1 Meg	½	9B1-98	BTS-1 Meg	
R58	22KΩ	5	9C12-1115	1 3/4A-22.5K	Note 1
R59	220KΩ	½	9B1-90	BTS-220K	
R60	33KΩ	½	9B1-80	BTS-33K	Note 3
R61	33KΩ	½	9B1-80	BTS-33K	
R62	47KΩ	½	9B1-82	BTS-47K	
R63	470KΩ	1	9B1-94	BTS-470K	Note 4
R64	8200Ω	½	9B1-73	BTS-8200	
R65	12KΩ	½	9B1-75	BTS-12K	
R66	220KΩ	½	9B1-90	BTS-220K	
R67	100KΩ	½	9B1-86	BTS-100K	Note 2
R68	1 Meg	½	9B1-98	BTS-1 Meg	
R69	150KΩ	½	9B1-88	BTS-150K	
R70	1000Ω	½	9B1 62	BTS-1000	
R71	1000Ω	½	9B1-62	BTS-1000	
R72	150KΩ	½	9B1-88	BTS-150K	
R73	2.2Meg	½	9B1-102	BTS-2.2Meg	
R74	2.2Meg	½	9B1-102	BTS-2.2Meg	
R75	150KΩ	½	9B1-88	BTS-150K	
R76	680KΩ	½	9B1-96	BTS-680K	
R77	680KΩ	½	9B1-96	BTS-680K	
R78	330KΩ	½	9B1-87	BTS-820K	
R79	56KΩ	½	9B1-83	BTS-56K	
R80	5600Ω	1	9B2-71	BTA-5600	
R81	820Ω	½	9B1-61	BTS-820	
R82	150KΩ	½	9B1-88	BTS-150K	
R83	100KΩ	½	9B1-86	BTS-100K	
R84	470KΩ	½	9B1-94	BTS-470K	
R85	500Ω	½	9B1-50		
R86	8200Ω	2	9B4-73	BTB-8200	
R87	3.5Ω	½	9C1-1067		Note 5
R88	175Ω	20	9M-21715		
R89	1500Ω	10	9M-20736	1 3/4A-1500	
R90	5.6Ω	½	9C1-1072		Note 6
R91	470KΩ	½	9B1-94	BTS-470K	
R92	5.6Ω	5	46M-20681		

Note 1. Models 25BR-3067A & 25BR-3068A use a 27KΩ (1 Watt) resistor in this application.
Note 2. Models 25BR-3067A & 25BR-3068A use a 220KΩ resistor in this application.
Note 3. Some models use a 12KΩ resistor in this application.
Note 4. Some models use a 330KΩ resistor in this application.
Note 5. Some models use a 2.2Ω resistor in this application.
Note 6. Not used in all models.

TRANSFORMER (FILAMENT)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIR LINE PART No.	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No	RCA Type No.
T1	117VAC ②	6.3VAC ③ 4A ⑤ 6.1A			12D21160			FO-66 ①	F-18X ①	

① Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: AIR LINE PART No.	STANCOR PART No.	MERIT PART No	CHICAGO PART No	TRIAD PART No	RCA Type No.	NOTES
T2	180Ω	990Ω	12M-18241-3	A-8125	A-3003	TBO-8	A-97X	209T3	Vert. Osc. Trans.
T3	215.5Ω	5Ω tap ④ 2.5Ω tap ③ 7.5Ω, 15.5Ω, 25.5Ω	201-21025						Horiz. Output Trans.
T4	107Ω tap ⑤ 7Ω	SEC. 2 0Ω	12C-20781-1	A-8141	A-3039	TBO-12	A-104X	226T1	Vert. Output Trans.
T5A	12Ω		201-21130 ③	DY-8 ③	MDF-70 ③	TY-2 ③	Y-12 ③	206D1	Horiz. Deflection Coils
B	85Ω		301-21514 ②						Vert. Deflection Coils

① Used in 17" Models.
② Used in 21" Models
③ Use original deflection coil network.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIR LINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T6	2.3KΩ	3.15Ω	176Ω	.55Ω	12C21215	A-3876	A-2928	RO-2	S-1X	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: AIR LINE PART No.	JENSEN PART No.	QUAM PART No	NOTES
SP1	5"	PM	3.15Ω	18A21216	ST-105 Mod. P5-X	5A07	

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE @ CURRENT 1000 ᵐA	REPLACEMENT DATA: AIR LINE PART No.	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No
L1	.270ADC	71Ω	2.92 Hy.	16A21214	C-2326	C-2991 ①	TR-3300 ①	C-17X

① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIR LINE PART No.	MILLER PART No	IRC PART No.	NOTES
L2	Ant. Trans.	0Ω CT	0Ω	13E-20767			High Band
L3	Ant. Trans.	0Ω CT	0Ω	13E-21289			Low Band
L4	Fil. Choke	.2Ω		16A-17937	6175		5.2 Microhenries
L5	Neutralizing Coil	0Ω		13M-20781			
L6	RF Choke	0Ω		13M-20780			
L7	RF Coil	0Ω		13E-17140			High Band
L8	RF Coil	0Ω		13E-12046			Low Band
L9	RF Choke	.9Ω		16A-17138			
L10	Mixer Grid Coil	0Ω		13E-17140			High Band
L11	Mixer Grid Coil	0Ω		13E-12046			Low Band
L12	Fil. Choke	.2Ω		16A-20777			
L13	Osc. Coil	0Ω		13E-17140			High Band
L14	Osc. Coil	0Ω		13D-12155			Low Band
L15	RF Choke	.2Ω		16A-21656			1 Microhenry
L16	RF Choke	2.2Ω		201-15608	4626		20 Microhenries
L17	1st. Video IF	.2Ω		201-20782	6188 †		
L18	Fil. Choke	.2Ω		16A-17937	6175		5.2 Microhenries
L19	2nd. Video IF	.2Ω		201-21111			Part # includes C33
L20	RF Choke	1.8Ω		16A-18676		CLA	2.2 Microhenries
L21	Fil. Choke	.2Ω		16A-17937	6175		5.2 Microhenries
L22	3rd. Video IF	.2Ω		201-21494			Includes 10KΩ resistor & 47MMF capacitor
L23	RF Choke	2.2Ω		201-15608	4626		20 Microhenries
L24	RF Choke	1.8Ω		16A-18676		CLA	2.2 Microhenries
L25	4th. Video IF	.3Ω	.6Ω	13B-21167			Includes CK-706 Crystal det., 5MMF capacitor & Series Peaking Coil
L26	Series Peaking Coil	2.7Ω		201-20265	6176		20 Microhenries
L27	RF Choke	2.2Ω		201-15608	4626		
L28	Series Peaking Coil	7.3Ω		16A-20970			250 Microhenries
L29	Shunt Peaking Coil	8Ω		16A-21391			305 Microhenries
L30	Shunt Peaking Coil	7.3Ω		16A-20970			270 Microhenries
L31	Sound IF	1.6Ω		201-21298	1470		
L32	Ratio Det.	8.2Ω	.8Ω CT	13M-21644 *			Tertiary Winding - .4Ω
L33	Horiz. Osc.	75Ω		201-20291		6210 †	
L34	RF Choke	2.2Ω		201-15608	4626		20 Microhenries
L35	RF Choke ■	2.2Ω		201-15608	4626		20 Microhenries

* Alternate part #13M-19643
■ Not used in all Models.
† Enlarge mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	AIRLINE PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.270ADC	21J20097	NH5	6Q4	1090	6S300	300
M2	.270ADC	21J20097	NH5	6Q4	1090	6S300	300

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					AIRLINE PART No.		
M3	Bayonet	6-8	.15	Brown	46A-10793		Type No. 47 (Not used in all models whereas some models use two pilot lights).

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M4	RF Tuner		
M5	Switch	20B-21506	Local-Suburban-Fringe Selector
M6	Centering Magnet	16M-20697	
M7	Ion Trap	16M-19906	
M8	Horizontal Lin. Magnet	16M-21526	Models 25BR-3058A, 25BR-3058B, 25BR-3061A.
M9	Correction Magnet	16M-21499	Models 25BR-3067A, 25BR-3067B, 25BR-3068A, 25BR-3068B, 25BR-3069A.
	Cabinet Back Assy.	200-21438	Models 25BR-3058A, 25BR-3058B, 25BR-3061A.
	Cabinet Back Assy.	200-21578	Models 25BR-3067A, 25BR-3067B, 25BR-3068A, 25BR-3068B, (25BR-3069A).
	Mask	25M-21638	Models 25BR-3058A, 25BR-3058B.
	Mask	25M-21643	Models 25BR-3061A.
	Mask	25M-21637	Models 25BR-3067A, 25BR-3067B, 25BR-3068A, 25BR-3068B, (25BR-3069A).
	Safety Glass	30M-21645	Models 25BR-3058A, 25BR-3058B.
	Safety Glass	30M-21646	Models 25BR-3061A.
	Safety Glass	30M-21647	Models 25BR-3067A, 25BR-3067B, 25BR-3068A, 25BT-3068B, (25BR-3069A).
	Knob	5B-21581-A56	Off/On Volume, Model 25BR-3069A.
	Knob	5B-21581-A76	Off/On Volume, All models except 25BR-3069A.
	Knob	5B-21574-A56	Tuning, Model 25BR-3069A.
	Knob	5B-21574-A76	Tuning, All models except 25BR-3069A.
	Knob	5B-21273-29	Brightness and Contrast (2 Used).
	Knob	5B-18383-36	Antenna

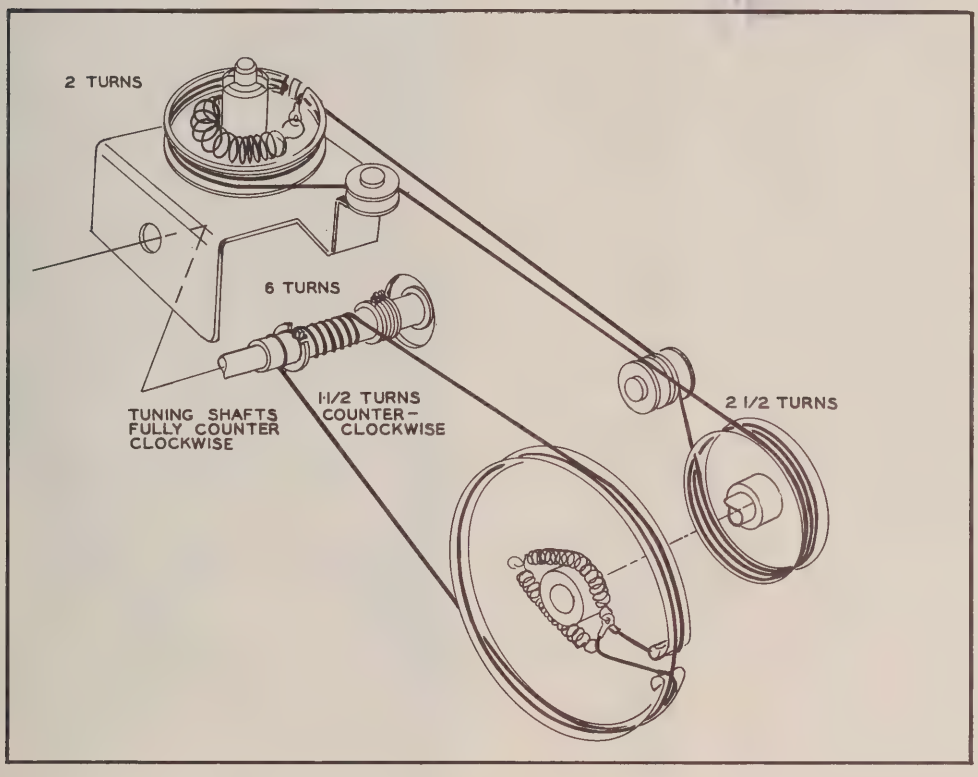
HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the contrast control for normal contrast.

Adjust the horizontal hold slug (B1) until the picture synchronizes horizontally and make any further adjustment of B1 necessary to set it to the middle of its range of synchronization.

Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally. Adjustment of B2 may affect the vertical size slightly.



DRIVE CORD STRINGING

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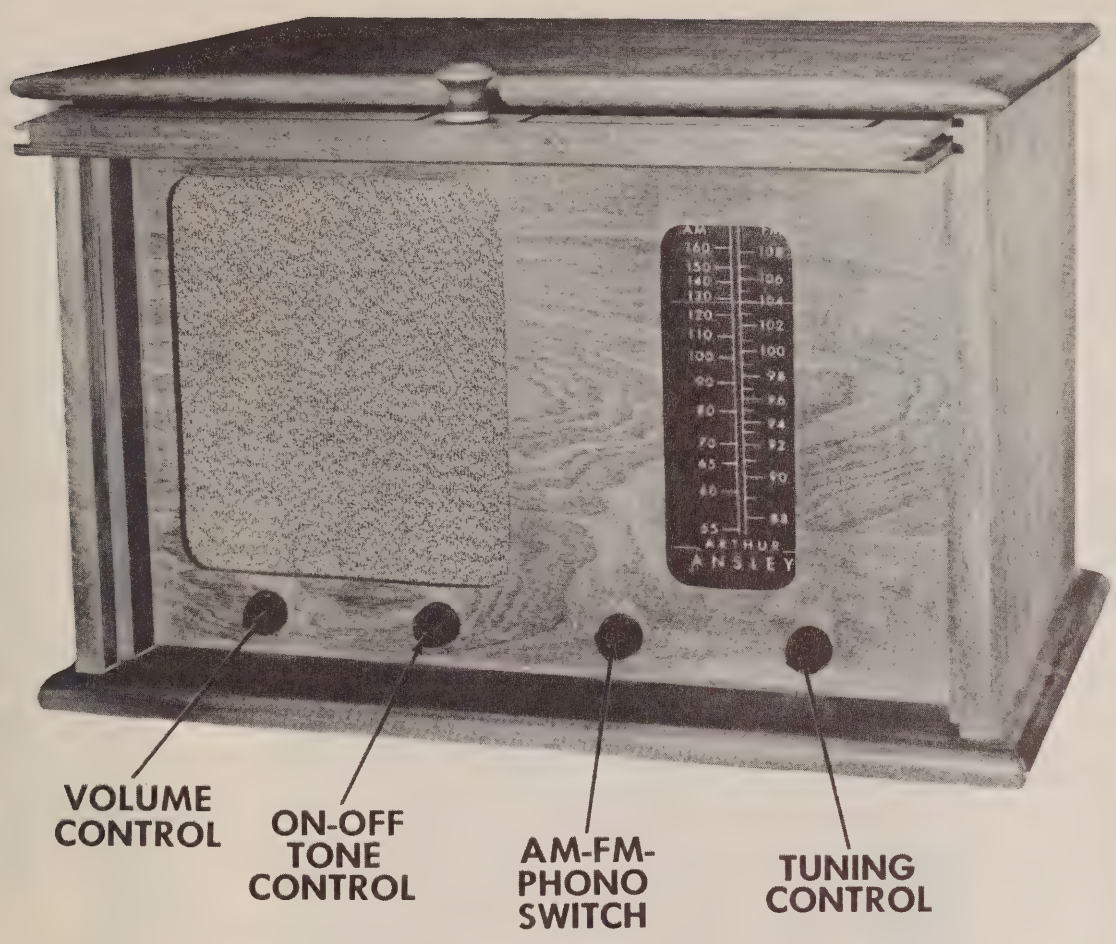
3924 MEADE ST.
RIVER, [illegible]

ARTHUR ANSLEY MODEL R-1

ARTHUR ANSLEY
MODEL R-1

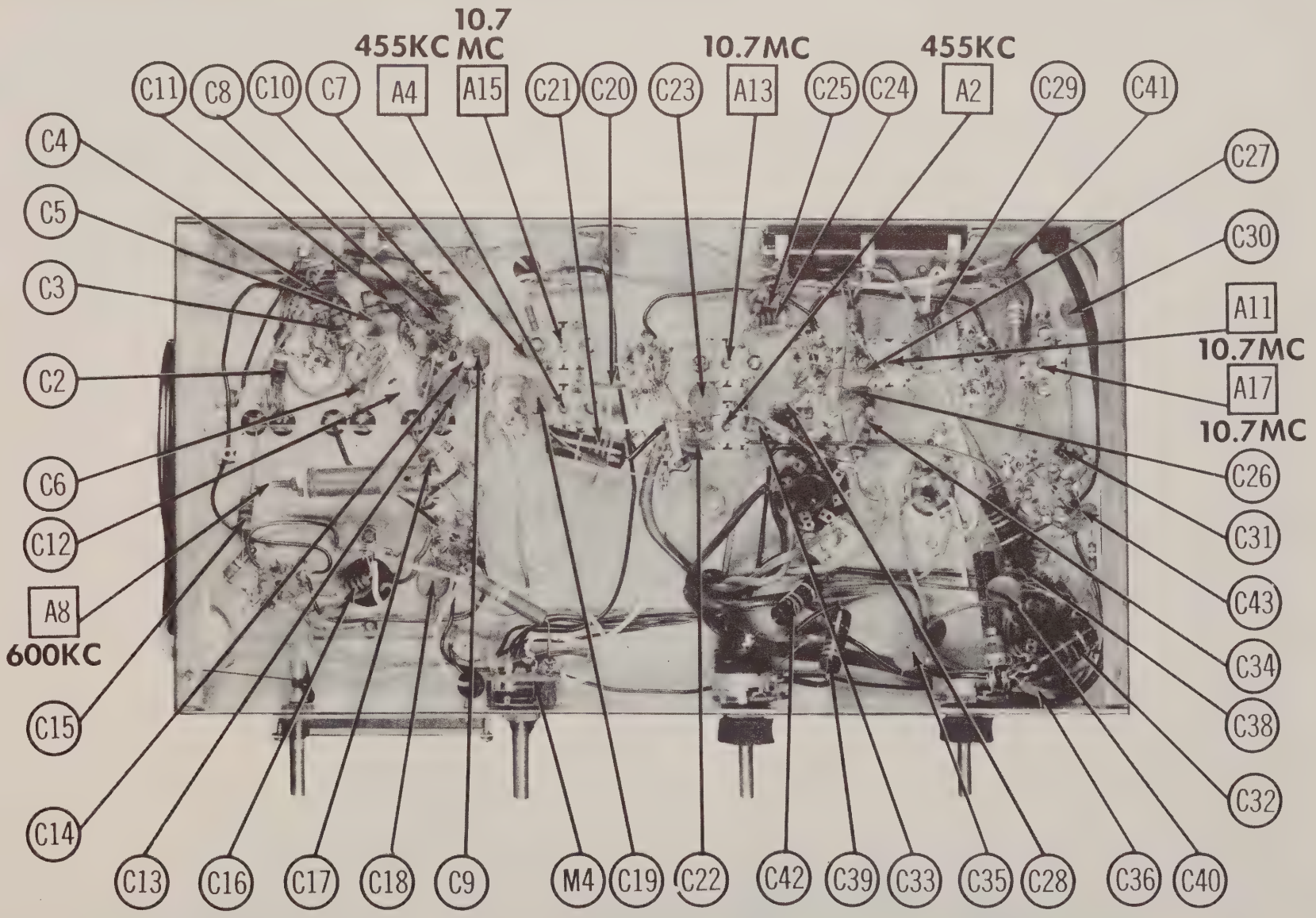


ARTHUR ANSLEY
MODEL R-1

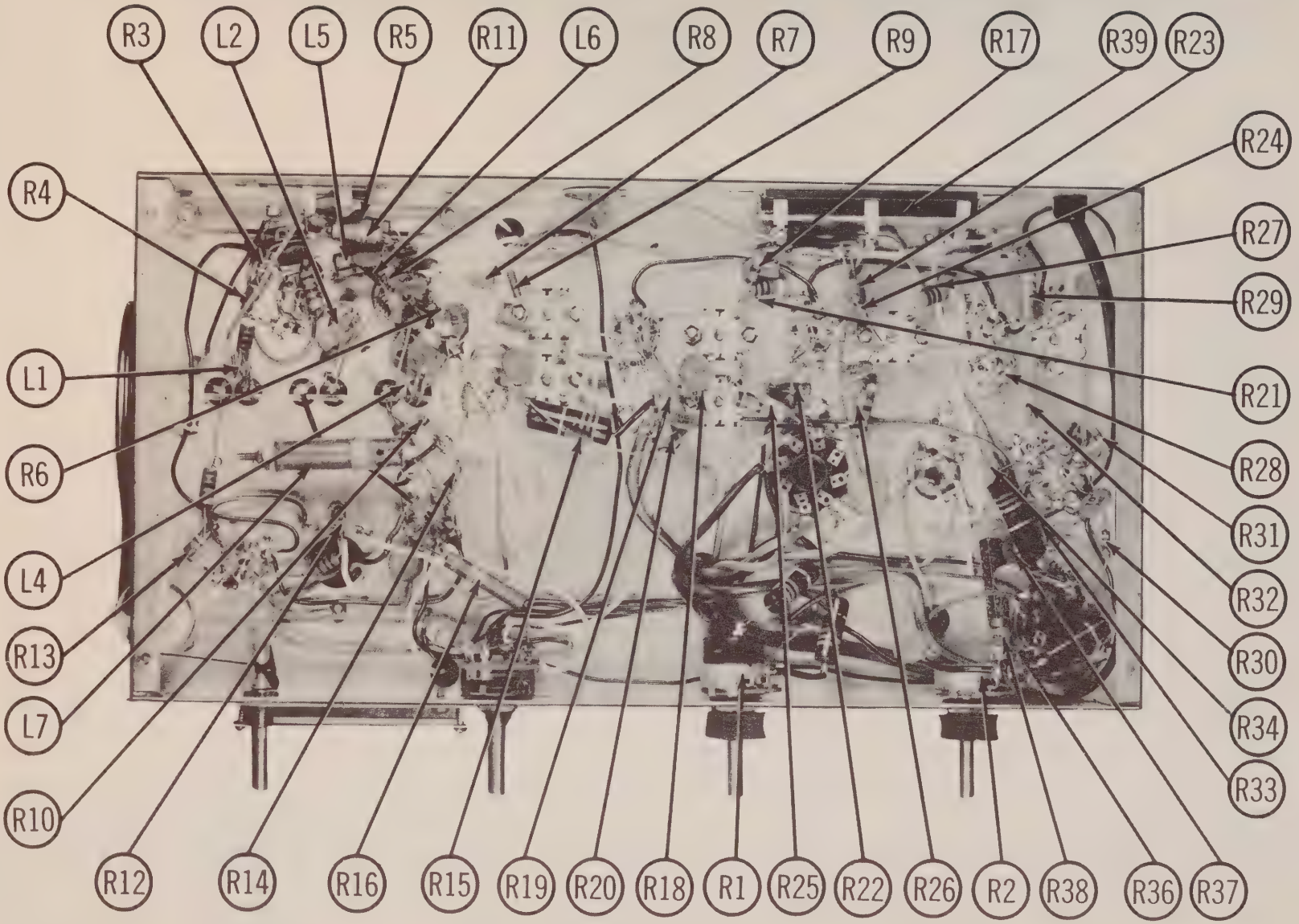
TRADE NAME	Arthur Ansley Model R-1
MANUFACTURER	Arthur Ansley Mfg. Co., Doylestown, Pa .
TYPE SET	AC Operated AM-FM Supeheterodyne Receiver
TUBES (Ten)	Types 6CB6 FM RF Amp., 6U8 FM Conv., 6BJ6 AM RF Amp., 6BE6 AM Conv., 6BA6 AM FM 1st. IF Amp., 6AU6 AM FM 2nd. IF Amp., 6AU6 FM Limiter, 6T8 Disc.-AM Det.-AVC-AF Amp., 6V6GT Audio Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .69 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1620 KC — FM 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1953 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

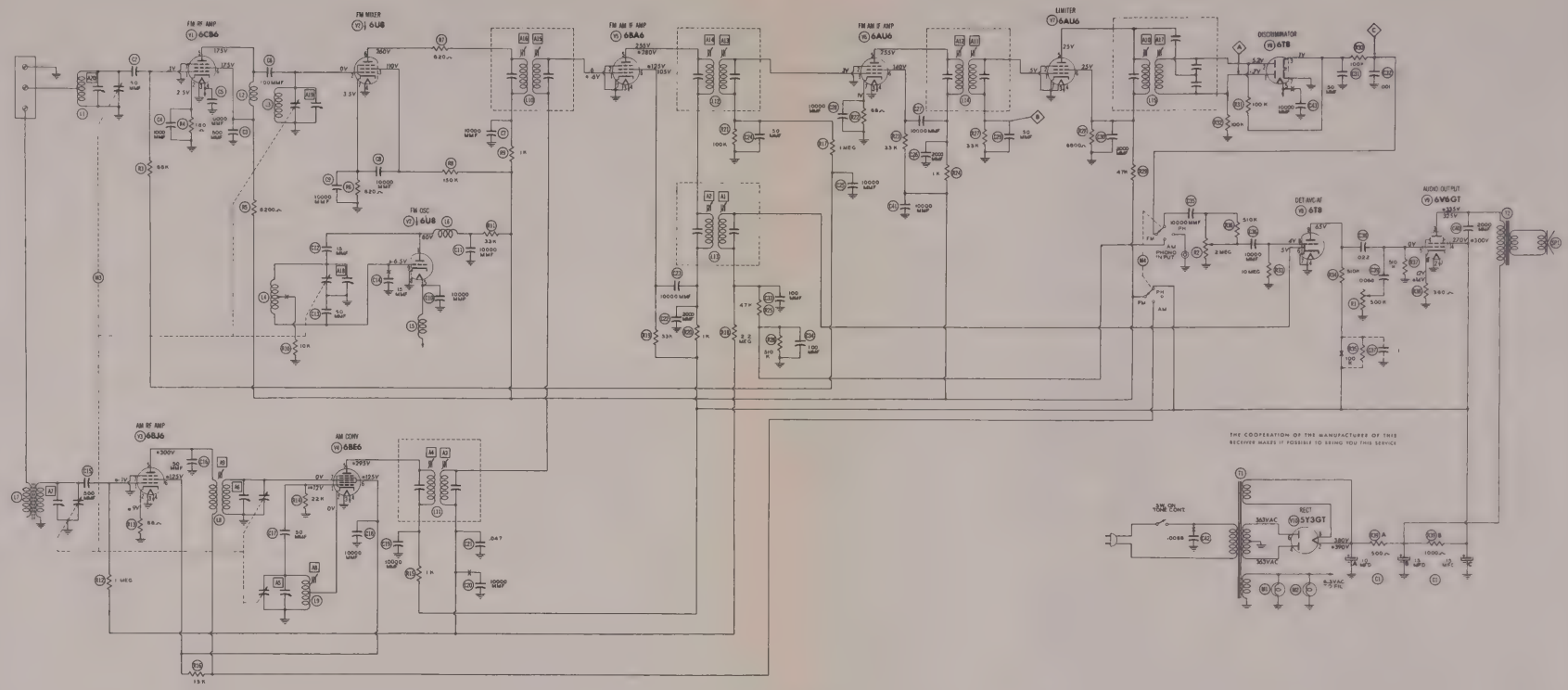


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

ARTHUR ANSLEY
MODEL R-1



IF=455 KC – AM
IF=10.7 MC – FM

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	1.2Meg	180Ω	0Ω	.1Ω	†9.7KΩ	†9.7KΩ	0Ω		
V 2	6U8	†34.5KΩ	0Ω	†151KΩ	.1Ω	0Ω	†3.3KΩ	820Ω	0Ω	10KΩ
V 3	6BJ6	■3.7Meg	68Ω	0Ω	.1Ω	†■1.5KΩ	†■16.5KΩ	0Ω		
V 4	6BE6	22KΩ	.4Ω	0Ω	.1Ω	†2.5KΩ	†■16.5KΩ	3.2Ω		
V 5	6BA6	2.7Meg	0Ω	0Ω	.1Ω	†2.5KΩ	†35KΩ	0Ω		
V 6	6AU6	100KΩ	0Ω	0Ω	.1Ω	†2.5KΩ	†35KΩ	68Ω		
V 7	6AU6	33KΩ	0Ω	0Ω	.1Ω	†48.5KΩ	†48.5KΩ	0Ω		
V 8	6T8	100KΩ	100KΩ	300KΩ	0Ω	.1Ω	550KΩ	0Ω	10 Meg	†470KΩ
V 9	6V6GT	INF	0Ω	†790Ω	†1.5KΩ	510KΩ	300KΩ	.1Ω	360Ω	
V 10	5Y3GT	INF	54KΩ ■5Meg	INF	87Ω	510KΩ	61Ω	INF	54KΩ ■5 Meg	

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE SPECIFIED
■ MEASURED IN "AM" POSITION
-A TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V10

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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200-2

RESISTANCE MEASUREMENTS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn tuning gang fully open and set pointer to upper limit of travel.

AM ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to stator plates, middle AM section of tuning cap. Low side to chassis.	455KC (400~Mod)	AM	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	200MMF	High side to external antenna terminal. Low side to chassis.	1400KC	"	1400KC	"	A5, A6 A7	Adjust in order given for maximum output.
3.	"	"	600KC	"	600KC	"	A8, A9	"
4.	Repeat steps 2 and 3 until no improvement in tracking is noted, ending AM alignment with adjustment of A5, A6 and A7 as in step 2.							

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to pin 1 (grid) of 6AU6 (V6). Low side to chassis.	10.7MC	FM	Tuning gang fully open.	DC probe thru 1Meg to point Ⓐ. Common to chassis.	A10, A11 A12	Adjust for maximum deflection. Attenuate generator output to maintain less than 1.5 volts at VTVM.
6.	"	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	"	"	"	DC probe thru 1Meg to point Ⓑ. Common to chassis.	A13, A14 A15, A16	"
7.	"	"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to pin 1 (grid) of 6AU6 (V7). Low side to chassis.	10.7MC (450KC Swp)	FM	Tuning gang fully open.	Vert. amp. to point Ⓒ Low side to chassis.	A17, A10	Short pin 1 (grid) of 6AU6 (V6) to chassis. Adjust A17 so that 10.7 10.7MC occurs at center of crossover lines as in Fig. 1. Adjust A10 for maximum amplitude and straightness of crossover lines. Repeat adjustment of A17 and A10 for greatest accurancy.
6.	"	High side to pin 1 (grid) of 6AU6 (V6). Low side to chassis.	"	"	"	Vert. amp. thru 10KΩ to point Ⓑ Low side to chassis.	A11, A12	Adjust for curve of maximum amplitude and symmetry as in Fig. 2. Attenuate generator to avoid distortion of response curve.
7.	"	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	"	"	"	"	A13, A14, A15, A16	"

FM RF ALIGNMENT

The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	To FM antenna terminals with 120Ω in each lead.	104MC (Unmod)	FM	104MC	DC probe thru 1Meg to point Ⓑ. Common to chassis.	A18, A19 A20	Adjust in order given for maximum deflection.
9.	"	"	90MC	"	Tune to 90MC signal.	"	L4, L3, L1	If dial setting varies more than .1MC from 90, compress or expand L4, L3, and L1 in order given for maximum deflection with dial setting at 90.
10.	Repeat steps 8 and 9 for optimum tracking.							

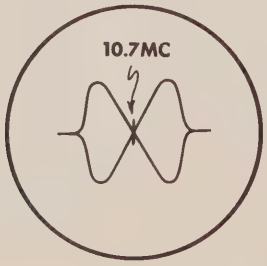


FIG. 1

FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA Arthur Ansley PART No.	REPLACEMENT DATA STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	FM RF Amplifier	6CB6	6CB6	7CM	
V2	FM Converter	6U8	6U8	9AE	
V3	AM RF Amplifier	6BJ6	6BJ6	7CM	
V4	AM Converter	6BE6	6BE6	7CH	
V5	1st. FM AM IF Amp	6BA6	6BA6	7BK	
V6	2nd. FM AM IF Amp	6AU6	6AU6	7BK	
V7	Limiter	6AU6	6AU6	7BK	
V8	Discriminator-Det.-AVC-AF Amp	6T8	6T8	9E	
V9	Audio Output	6V6GT	6V6GT	7S	
V10	Rectifier	5Y3GT	5Y3GT	5T	

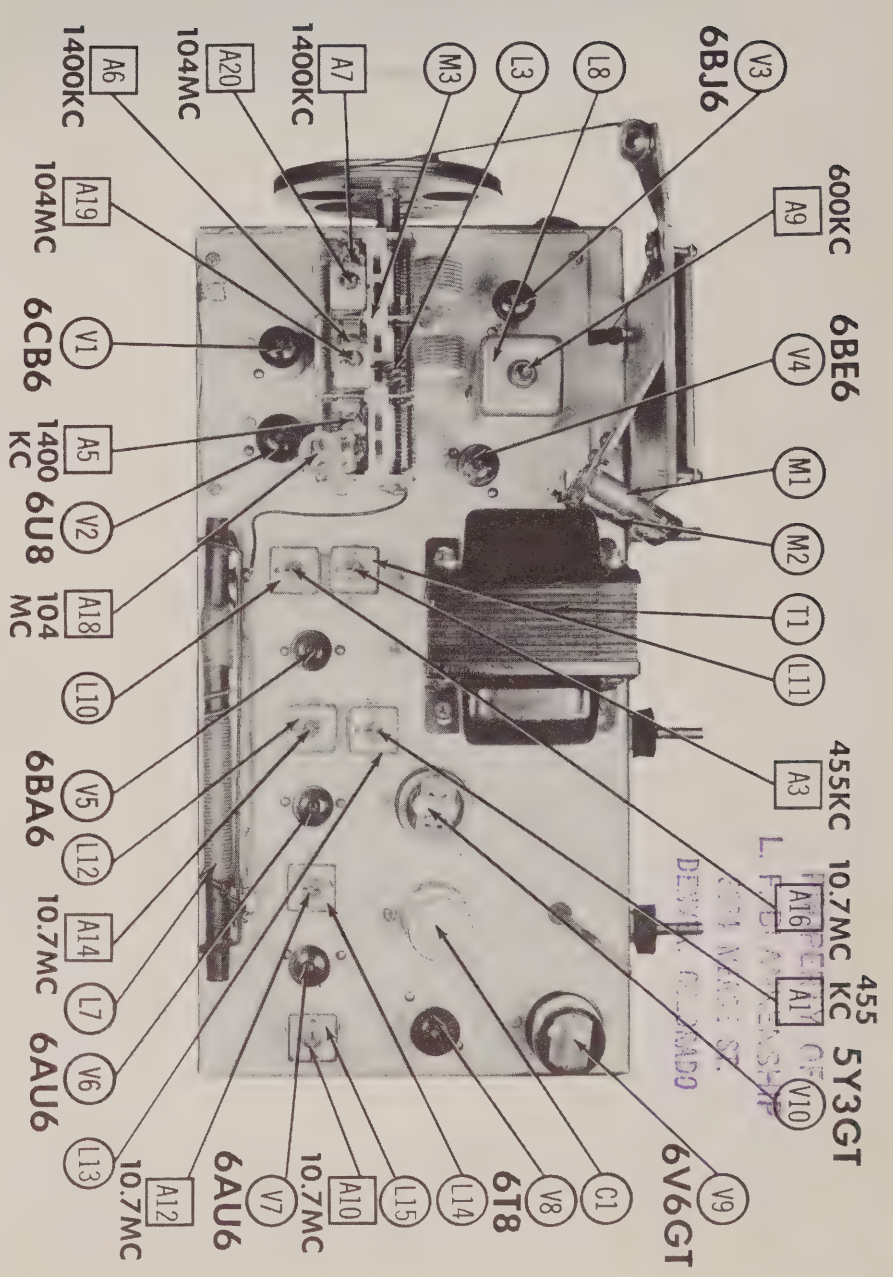
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Arthur Ansley PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	10	450	CO2.4	AFH3-33		CO25		FP376.1	TVL-3778	
B	■15	450								
C	▲15	450								
C2	50		CO1.2	SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	
C3	500		CO1.4	SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C4	1000		CO1.5	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C5	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C6	100		CO1.3	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C7	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C8	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C9	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C10	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C11	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C12	15		CO1.1	SI15NP0	TCZ-15		NP0K-150	ZT-5415	5TCC-Q15	
C13	50	500	CO3.1							
C14	15		CO1.1	SI15NP0	TCZ-15		NP0K-150	ZT-5415	5TCC-Q15	Note 1
C15	500		CO1.4	SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C16	50		CO1.2	SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	
C17	50		CO1.2	SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	
C18	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C19	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C20	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	Note 1
C21	.047	400	CO4.6	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C22	2000		CO1.6	BPD-002	DD-202	TM5D2	GP2-333-202	DC-522	5HK-D2	
C23	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C24	50		CO1.2	SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	
C25	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C26	2000		CO1.6	BPD-002	DD-202	TM5D2	GP2-333-202	DC-522	5HK-D2	
C27	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C28	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C29	50		CO1.2	SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	
C30	2000		CO1.6	BPD-002	DD-202	TM5D2	GP2-333-202	DC-522	5HK-D2	
C31	50		CO1.2	SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	
C32	.001	400	CO4.1	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C33	100		CO1.3	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C34	100		CO1.3	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C35	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C36	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C37	.1	600	CO4.7	P688-1	DF-104	PTE6P1		PT601	6TM-P1	Note 2
C38	.022	400	CO4.5	P488-022	DF-203	PTE4122		PT4122	4TM-S22	
C39	.0068	400	CO4.3	P488-0068	D6-682	PTE6D68	GP2-333-682		6TM-D68	
C40	2000		CO1.6	BPD-002	DD-202	TM5D2	GP2-333-202	DC-522	5HK-D2	
C41	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C42	.0068	400	CO4.3						6TM-D68	Note 1
C43	10000		CO1.8	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	Note 1

Note 1. Not used in all Models.
Note 2. Not used in late production.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	Arthur Ansley PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	RE4.5	Q13-133	AG-60-Z	B-60-S	U-48	Tone
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	2 Meg	½	RE4.7	Q13-139	AG-66-Z	B-76	U-55	Volume
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Arthur Ansley PART No.	IRC PART No.	
R3	68KΩ	½	RE1.14	BTS-68K	
R4	180Ω	½	RE1.3	BTS-180	
R5	8200Ω	2	RE2.4	BTB-8200	
R6	820Ω	½	RE1.5	BTS-820	
R7	820Ω	½	RE1.5		
R8	150KΩ	½	RE1.16	BTS-150K	
R9	1000Ω	½	RE1.6	BTS-1000	
R10	10KΩ	½	RE1.9	BTS-10K	Note 1
R11	33KΩ	1	RE2.6	BTA-33K	
R12	1 Meg	½	RE1.21	BTS-1 Meg	
R13	68Ω	½	RE1.1		
R14	22KΩ	½	RE1.10	BTS-22K	
R15	1000Ω	½	RE1.6	BTS-1000	
R16	15KΩ	2	RE2.5	BTB-15K	
R17	1 Meg	½	RE1.21	BTS-1 Meg	
R18	2.2Meg	½	RE1.22	BTS-2.2Meg	
R19	33KΩ	1	RE2.6	BTA- 33K	
R20	1000Ω	½	RE1.6	BTS-1000	
R21	100KΩ	½	RE1.15	BTS-100K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Arthur Ansley PART No.	IRC PART No.	
R22	68Ω	½	RE1.1		
R23	33KΩ	1	RE2.6	BTA-33K	
R24	1000Ω	½	RE1.6	BTS-1000	
R25	47KΩ	½	RE1.13	BTS-47K	
R26	510KΩ	½			
R27	33KΩ	½	RE1.12	BTS-33K	
R28	6800Ω	½	RE1.8	BTS-6800	
R29	47KΩ	1	RE2.7	BTA-47K	
R30	100KΩ	½	RE1.15	BTS-100K	
R31	100KΩ	½	RE1.15	BTS-100K	
R32	100KΩ	½	RE1.15	BTS-100K	
R33	10 Meg	½	RE1.23	BTS-10 Meg	
R34	510KΩ	½			
R35	100KΩ	½	RE1.15	BTS-100K	Note 2
R36	510KΩ	½			
R37	510KΩ	½			
R38	360Ω-5%	2	RE2.2	BTB-360-5%	
R39A	500Ω	5	RE3.6		
B	1000Ω	3.5			

Note 1. Not used in all models.
Note 2. Not used in late production models.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	Arthur Ansley PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC Ⓐ.69A	726VCT .084ADC	5VAC Ⓐ 2A	6.3VAC Ⓐ3.3A	TR-2.4	PC-8410		PV-90	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		Arthur Ansley PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	4.3KΩ	3.2Ω	290Ω	.67Ω		A-3877 ①	A-2930 ①	RO-9 ①	S-34 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Arthur Ansley PART No.	JENSEN PART No.	QUAM PART No.	
SP1	8"	PM	3.2Ω		ST-115 Mod. P8-V	8A21	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

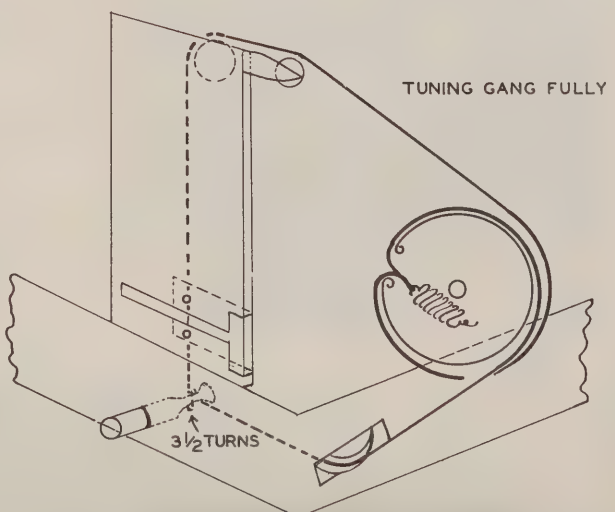
ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	Arthur Ansley PART No.	MILLER PART No.	IRC PART No.	
L1	FM Ant. Coil	0Ω		TR3.11			Tapped
L2	FM RF Choke	3Ω		TR3.8		CLA	3.3 Microhenries
L3	FM RF Coil	0Ω		TR3.12			
L4	FM Osc. Coil	0Ω		TR3.13			Tapped
L5	Fil. Choke	.59Ω		TR3.7		CLA	.82 Microhenry
L6	FM RF Choke	1.8Ω		TR3.9		CL-1	5.6 Microhenries
L7	AM Loop Ant.	0Ω	.2Ω	TR3.10			
L8	AM RF Coil	100Ω	3.2Ω	TR3.5	73-RF		
L9	AM Osc. Coil	5Ω		TR3.6			Tapped Ⓐ 4.6Ω
L10	1st. FM IF	1.2Ω	1.2Ω	TR3.1	1463		
L11	1st. AM IF	10Ω	10Ω	TR3.2	12-C1		
L12	2nd. FM IF	1.2Ω	1.2 Ω	TR3.1	1463		
L13	2nd. AM IF	10Ω	10Ω	TR3.3	12-C2		
L14	3rd. FM IF	1.2Ω	1.2Ω	TR3.1	1463		
L15	Discriminator	.4Ω	1.6Ω	TR3.4	1464		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Arthur Ansley PART No.		
M1	Bayonet	6-8	.15	Brown			Type No. 47.
M2	Bayonet	6-8	.15	Brown			Type No. 47.

MISCELLANEOUS

ITEM No.	PART NAME	Arthur Ansley PART No.	NOTES
M3	Tuning Capacitor	C05.3	28-468MMF, 28-468MMF, 32-168MMF.
M4	Switch		AM-FM
A19, A20	Trimmer Capacitor	C05.1	Antenna and Mixer (FM); 2 Used.
A18	Trimmer Capacitor	C05.2	Oscillator (FM)



DIAL CORD DRIVE

BROCINER
MODEL CA-2

INPUT SELECTOR

BASS TONE CONTROL

TREBLE TONE CONTROL

VOLUME CONTROL ON-OFF SW

BROCINER
MODEL CA-2

TRADE NAME	Brociner Model CA-2.
MANUFACTURER	Brociner Electronics Lab., 1546 Second Avenue, New York 28, N. Y.
TYPE SET	AC Operated 4 Channel Pre-Amplifier
TUBES (Two)	Types: 12AU7 Pre-Amp., 12AU7 AF Amp.
POWER SUPPLY	110-120 Volts AC - 60 Cycle RATING .10 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

BROCINER MODEL CA-2

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BROCINER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	Pre-Amplifier	12AU7	12AU7	9A	
V2	AF Amplifier	12AU7	12AU7	9A	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BROCINER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■20	350		AFH2-37		B030		FP227	TVL-2755	
B	▲20	350								
C2A	■20	400		AFH3-120		C099		FP345.8	TVL-3678	
B	▲20	400								
C	20	25								
C3	50	150		PRS150/50		BR5015A		TC49	TVA-1414	Note 1
C4	.02	200		P488-02	DF-203	PJ2S2		PT412	2TM-S2	
C5	300	500		1468-0003		5W5T3	GP2K-301	MC241	1FM-33	
C6	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C7	.1	400		P488-1	DF-104	PTE4P1		PT401		
C8	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C9	.005	400		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C10	.02	200		P488-02	DF-203	PJ2S2		PT412	2TM-S2	
C11	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C12	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C13	.25	200		P488-25		PJ2P25		PT4025	2TM-P25	
C14	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C15	.03	200		P488-03		PTE6S3		PT413	6TM-S3	Note 2
C16	.01	200		P488-01	D6-103	PTE4S1		PT411	4TM-S1	
C17	.005	400		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C18	1000	500		1468-001	D6-102	1W5D1	GP26-102	MC251	1FM-21	
C19	.002	600		P688-002	D6-203	PTE6D2	GP2-333-202	PT622	6TM-D2	
C20	.02	400		P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C21	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	Note 3.

Note 1: Some models use 25MFD in this application.
Note 2: Some models use .02MFD in this application.
Note 3: Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BROCINER PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½		Q13-133X	AT-78	BT-67-S	UT-430	Volume - Tapped@125KΩ
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A.
C	Switch			76-1	SW-A	Not Req.	Not Req.	Attach to R1A.
R2A	200Ω	2			A43-200			Hum Balance - Wire Wound
B	Shaft				FKS-1/4			Attach to R2A.

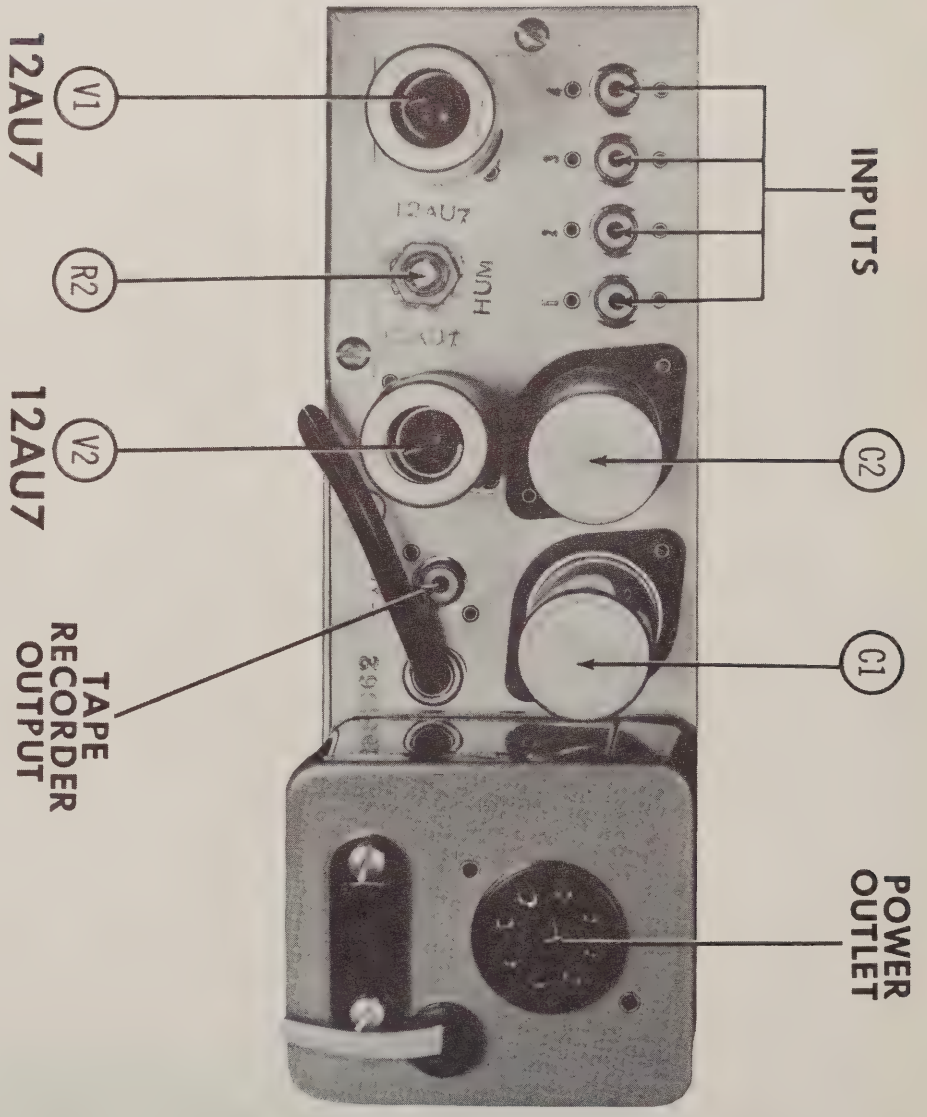
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Brociner PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R3	1Meg	½		BTS-1Meg	
R4	1000Ω	½			Note 1
R5	51KΩ	½			Note 1
R6	680Ω	½			Note 1
R7	150KΩ	½		BTS-150K	
R8	51KΩ	½			Note 1
R9	18KΩ	½			Note 1
R10	1Meg	½		BTS-1Meg	
R11	150KΩ	½		BTS-150K	
R12	150KΩ	½		BTS-150K	
R13	220KΩ	½		BTS-220K	Note 2
R14	560KΩ	½		BTS-560K	Note 3
R15	1Meg	½		BTS-1Meg	
R16	220KΩ	½		BTS-220K	Note 2
R17	3700Ω	½			

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Brociner PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R18	16KΩ	½			
R19	4700Ω	½		BTS-4700	
R20	330KΩ	½		BTS-330K	
R21	560KΩ	½		BTS-560K	Note 3
R22	560KΩ	½		BTS-560K	Note 3
R23	1000Ω	½		BTS-1000	
R24	24KΩ	½			
R25	1Meg	½		BTS-1Meg	
R26	10KΩ	½		BTS-10K	
R27	4.7Meg	½		BTS-4.7Meg	
R28	47KΩ	½		BTS-47K	
R29	4700Ω	½		BTS-4700	
R30	300KΩ	½			Note 4
R31	300KΩ	½			Note 4

Note 1. These resistors are low noise type.
Note 2. Some Models use a 270KΩ resistor in this application.
Note 3. Some Models use a 470KΩ resistor in this application.
Note 4. Not used in all Models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	Brociner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @ .1A	240V .015ADC	6.3VAC @ .3A	6.3VAC @ .45A					

TONE CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (@ CURRENT 1000 ∿)	Brociner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1		330Ω	.1 Hy.					

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	BROCINER PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1A, B, C	.015	*		8Y1	1159 ①	8S20	35 ②

* Three "ganged" selenium rectifiers. For complete replacement use three of the listed replacement rectifiers.
① Add tie points for mounting.
② Drill new mounting holes.

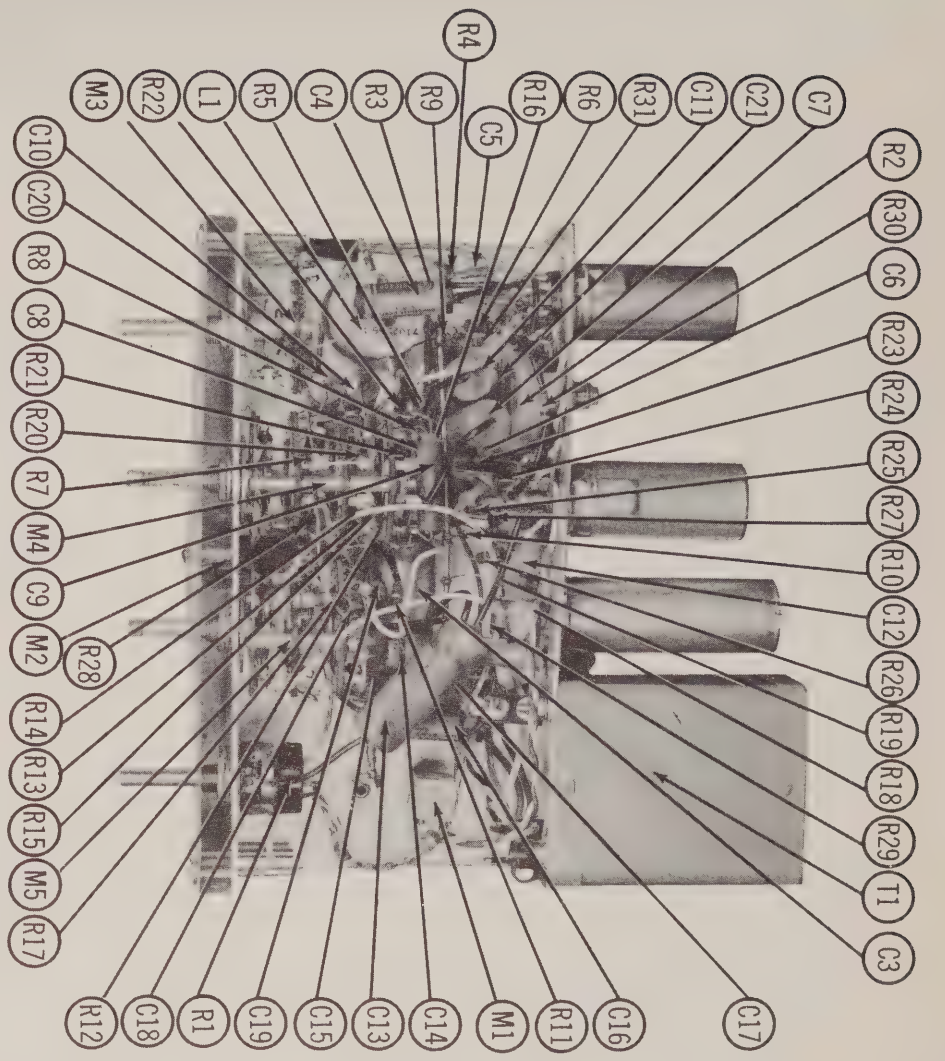
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					BROCINER PART No.		
M2	Bayonet	6-8	.15	Brown			Type No. 47

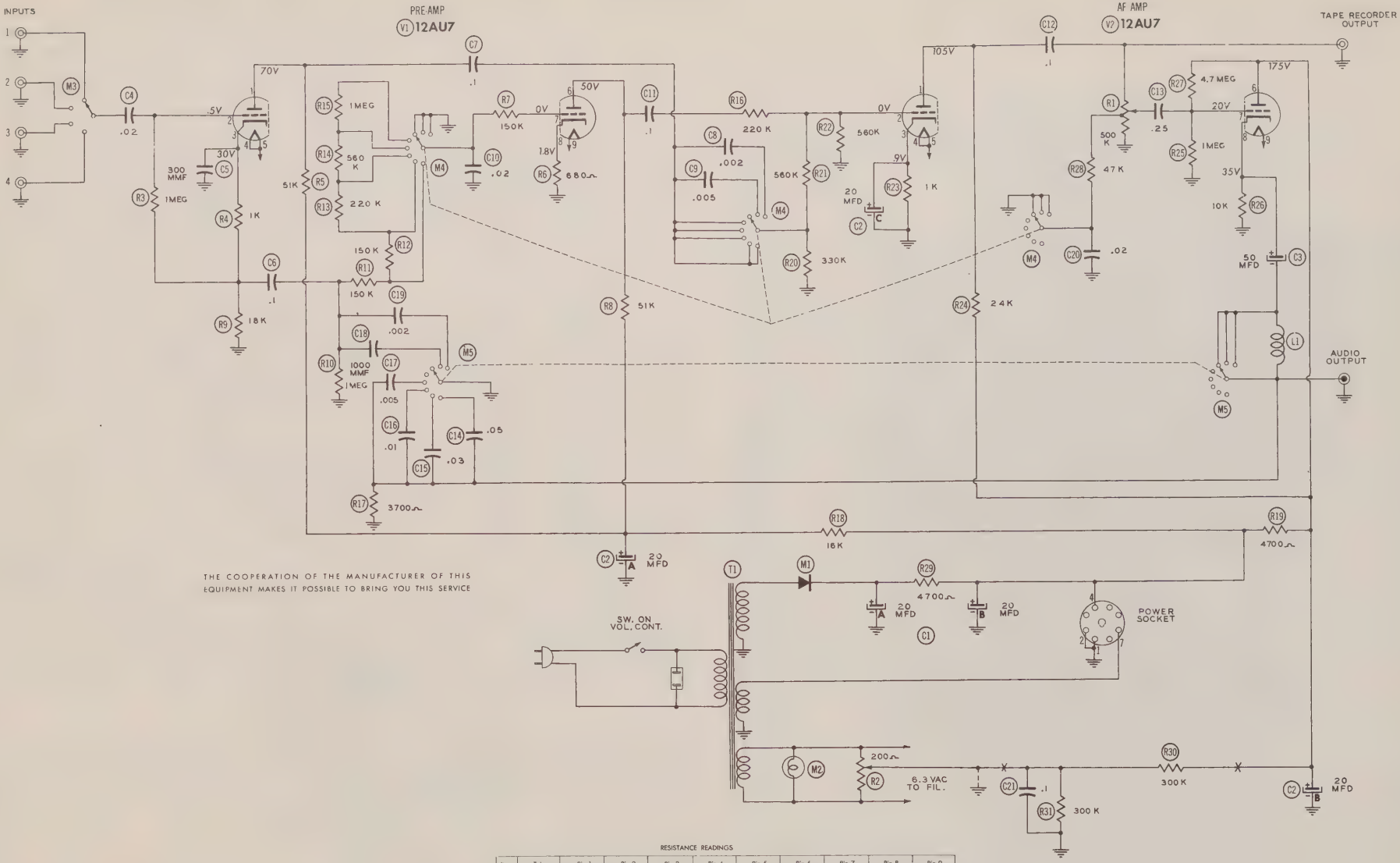
MISCELLANEOUS

ITEM No.	PART NAME	BROCINER PART No.	NOTES
M3	Switch		Input Selector
M4	Switch		Bass Control
M5	Switch		Treble Control

CHASSIS—BOTTOM VIEW



BROCINER MODEL CA-2



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AU7	†65KΩ	1Meg	15KΩ	†180KΩ	†180KΩ	†63KΩ	1.0KΩ	680Ω	†180KΩ
V 2	12AU7	†34KΩ	350KΩ	1KΩ	†180KΩ	†180KΩ	†5.4KΩ	800KΩ	10KΩ	†180KΩ

■ 6.3VAC ACROSS FILAMENTS.
ALL MEASUREMENTS TAKEN WITH "BASS CONTROL" IN "FLAT" POSITION.
† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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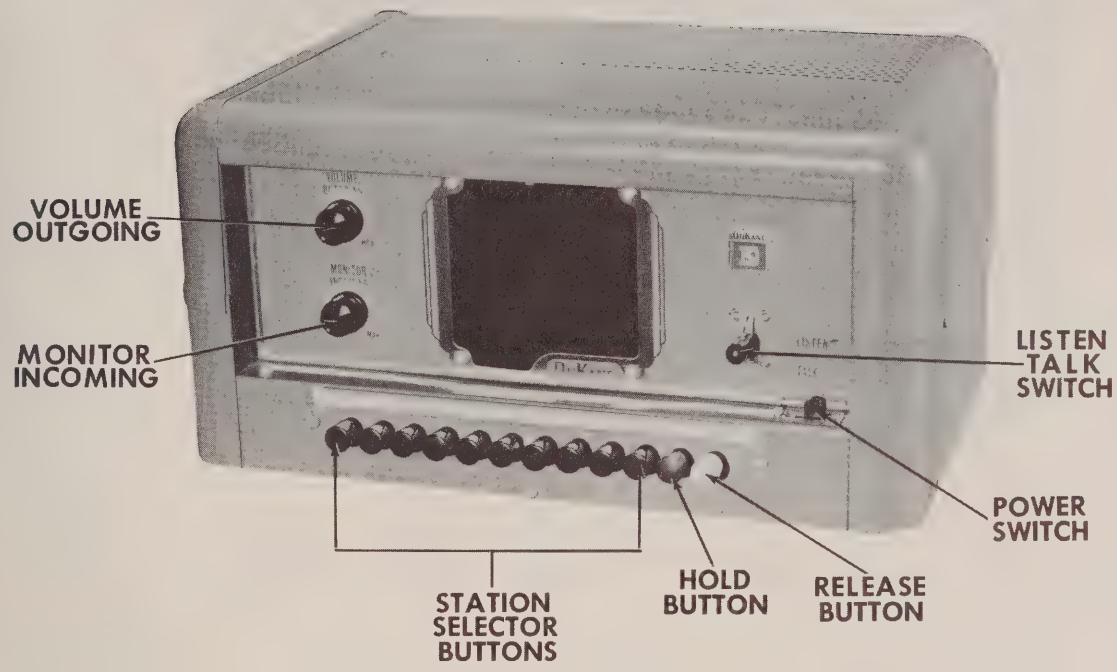
200-3

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 Volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

DUKANE MODEL 4C100

PROPERTY OF
L. F. BLANKENSHIP
3824 MILWEE ST.
DENVER, COLORADO

DUKANE MODEL 4C100



DUKANE MODEL 4C100

TRADE NAME	DuKane Model 4C100
MANUFACTURER	DuKane Corp., St. Charles, Illinois
TYPE SET	AC Operated Intercommunication Master Unit
TUBES (Five)	Types 5879 Pre-Amp., 6SL7GT AF Amp.-Phase Inv., (2) 6V6GT Audio Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC - 50/60 Cycle RATING .675 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

DUKANE MODEL 4C100

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DUKANE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	Pre-Amplifier	5879	5879		
V2	AF Amplifier - Phase Inverter	6SL7GT	6SL7GT	8BD	
V3	Audio Output	6V6GT	6V6GT	7S	
V4	Audio Output	6V6GT	6V6GT	7S	
V5	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DUKANE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	20	500	199-2914	AFH2-69		B050		FP280	TVL-2920	
B	20	500								
C2A	30	350	199-2905	AFH3-37		C028		FP396	TVL-3840	
B	20	350								
C	10	350								
C3	20	25	199-2001-206	PRS25/25		BR202A		TC26	TVA-1205	
C4	.1	400	199-4021-104	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C5	.1	400	199-4021-104	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C6	.0005	600	199-4030-501	P685-0005	D6-501	PTE6T5	GP2K-501	TP403	6TM-T5	
C7	.0001	600	199-4030-101	SI100	D6-101	TM5T1	GP1K-101	TP401	6TM-T1	
C8	.1	400	199-4021-104	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C9	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C10	.1	400	199-4021-104	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C11	.1	400	199-4021-104	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C12	.0001	600	199-4030-101	SI100	D6-101	TM5T1	GP1K-101	TP401	6TM-T1	
C13	.006	600	199-4030-602	P688-006		PTE6D6		PT626	6TM-D6	

CONTROLS

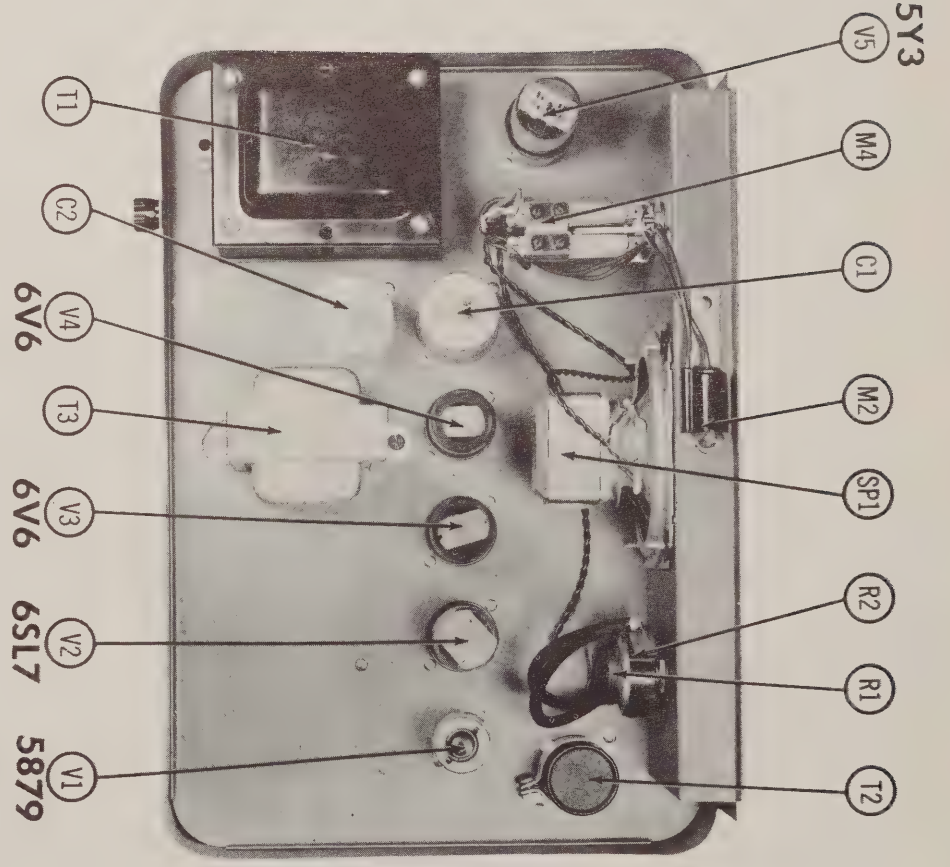
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DUKANE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	400Ω	2	601-39-00	W-400	A43-400	V-126		Monitor Incoming.
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.		Attach to R1A.
R2A	500KΩ	½	601-3289	QI3-133	AG-60-Z	B-60	U-48	Volume Outgoing.
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R2A.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: DUKANE PART No.	IRC PART No.	NOTES
R3	47KΩ	1	600-0116-473	BTA-47K	
R4	68KΩ	½	600-0080-683	BTS-68K	
R5	2.2Meg	1	600-0116-225	BTA-2.2Meg	
R6	470KΩ	1	600-0116-474	BTA-470K	
R7	100KΩ	1	600-0116-104	BTA-100K	
R8	1000Ω	1	600-0116-102	BTA-1000	
R9	270KΩ	1	600-0116-274	BTA-270K	
R10	33KΩ	1	600-0116-333	BTA-33K	
R11	1000Ω	1	600-0116-102	BTA-1000	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: DUKANE PART No.	IRC PART No.	NOTES
R12	8200Ω	1	600-0116-822	BTA-8200	
R13	270KΩ	1	600-0116-274	BTA-270K	
R14	270KΩ	1	600-0116-274	BTA-270K	
R15	250Ω	5	600-1008-251	1-3/4A-250	
R16	270KΩ	1	600-0116-274	BTA-270K	
R17	56KΩ	1	600-0116-563	BTA-56K	
R18	10KΩ	1	600-0116-103	BTA-10K	
R19	1000Ω	5	600-1008-102	1-3/4A-1000	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	DUKANE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117V AC .68A	660VCT .100ADC	5VAC @1.8A	6.3VAC @ 1.7A	710-4041	PM-8410	P-2953	PH-120B	R-14B

TRANSFORMER (INPUT)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	DUKANE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T2	5.7ΩCT	2.1KΩ			710-3036				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		DUKANE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T3	15KΩ		520ΩCT	5.4ΩCT .73Ω	710-2031					

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. RES.	DUKANE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	64Ω	S-10995		4A1Z64	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			DUKANE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A 250V	320-835-0200		312002 (3AG - 2A)	342001	AGC-2	HKP

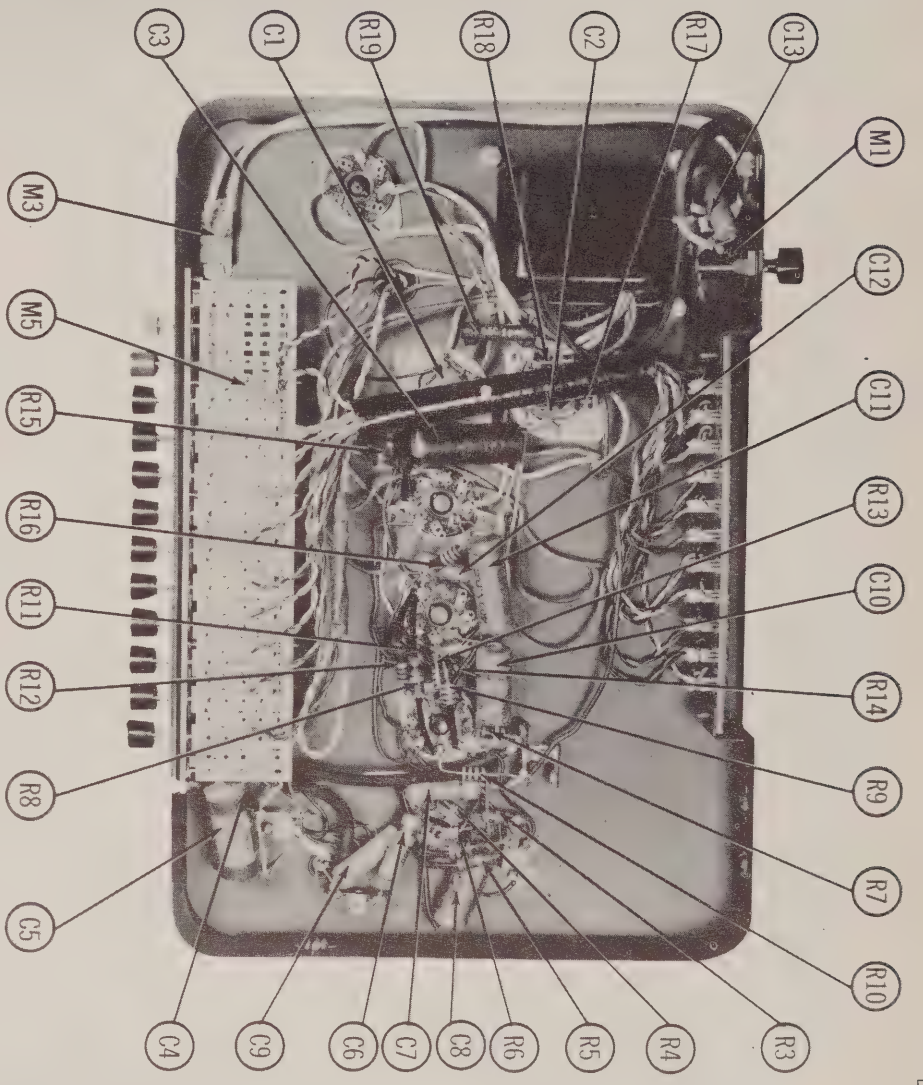
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					DUKANE PART No.		
M2	Bayonet	7.5	.2	White	456-8891		Type No. 51.

MISCELLANEOUS

ITEM No.	PART NAME	DUKANE PART No.	NOTES
M3	Switch	680-165	On/ Off Switch
M4	Switch	680-169	Talk/ Listen
M5	Switch	680-71	Station Selector

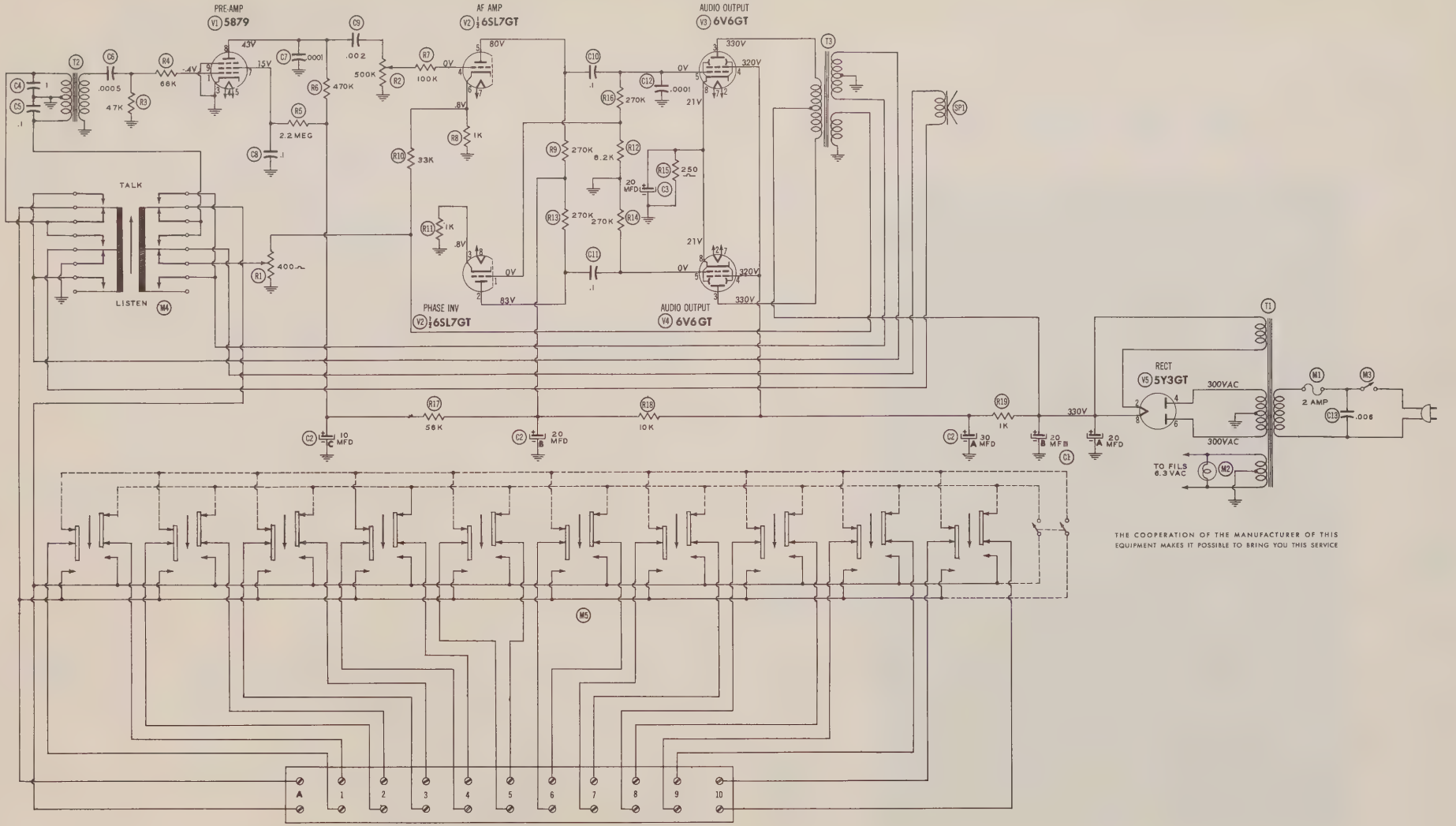
CHASSIS—BOTTOM VIEW



SET 200 FOLDER 4

DUKANE MODEL 4C100

DUKANE MODEL 4C100



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	5879	115KΩ	0Ω	0Ω	.1Ω	.1Ω	0Ω	†2.5Meg	†550KΩ	0Ω
V 2	6SL7GT	8.2KΩ	†280KΩ	1KΩ	100KΩ	†280KΩ	1KΩ	.1Ω	.1Ω	
V 3	6V6GT	0Ω	.1Ω	†305Ω	†1KΩ	280KΩ	.1Ω	.1Ω	250Ω	
V 4	6V6GT	0Ω	.1Ω	†215Ω	†1KΩ	270KΩ	INF	.1Ω	250Ω	
V 5	5Y3GT	INF	190KΩ	INF	87Ω	INF	87Ω	INF	150KΩ	

† MEASURED FROM PIN 8 OF V5.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 Volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

PHOTOFACT* Folder

*TRADE MARK

FADA
MODELS DL21T, 21C2, 21T, 24T2, 215C

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MODEL 215C

FADA
MODELS DL21T, 21C2, 21T, 24T2, 215C

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DATE 4-53 SET 200 FOLDER 5

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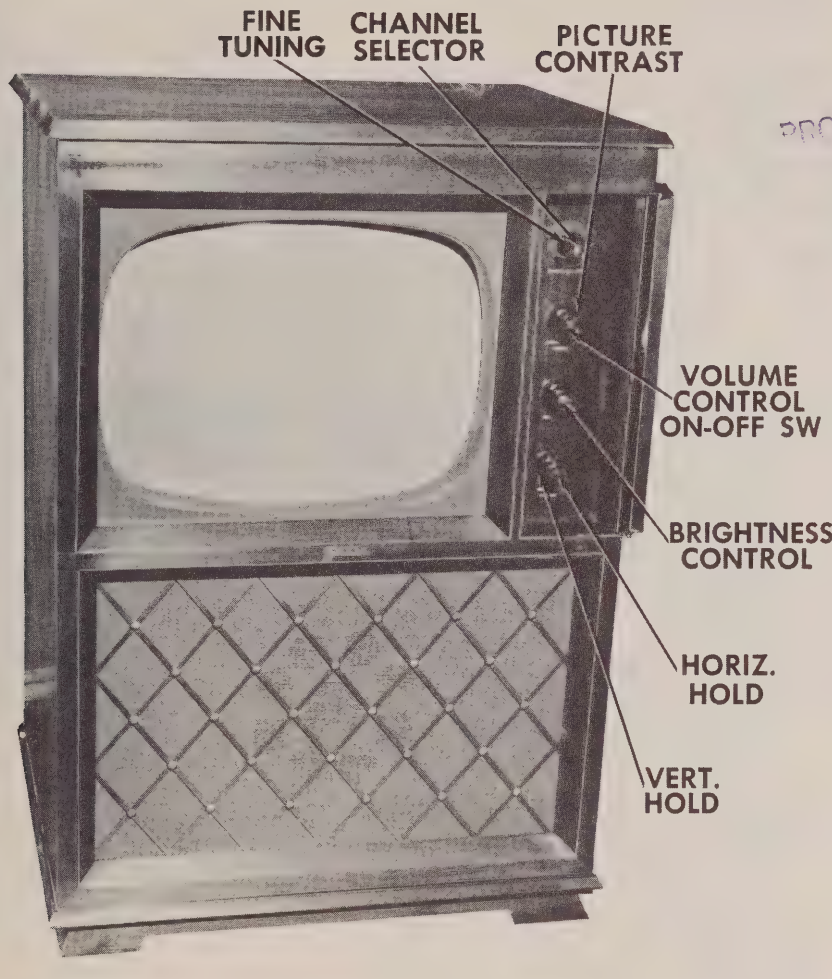
MODELS DL21T, 21C2, 21T, 24T2, 215C



PROPERTY OF

FADA
MODELS DL21T, 21C2, 21T, 24T2, 215C

FADA MODEL 215C

TRADE NAME	Fada Models DL21T, 21C2, 21T, 24T2, 215C
MANUFACTURER	Fada Radio & Electric Co., Inc., 525 Main St., Belleville, N.J.
TYPE SET	Television Receiver
TUBES	Twenty-One
POWER SUPPLY	110-120 Volts AC-60Cycle RATING 2.26 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13, Video IF 26.1MC, Sound IF 21.6MC (Interrcarrier).

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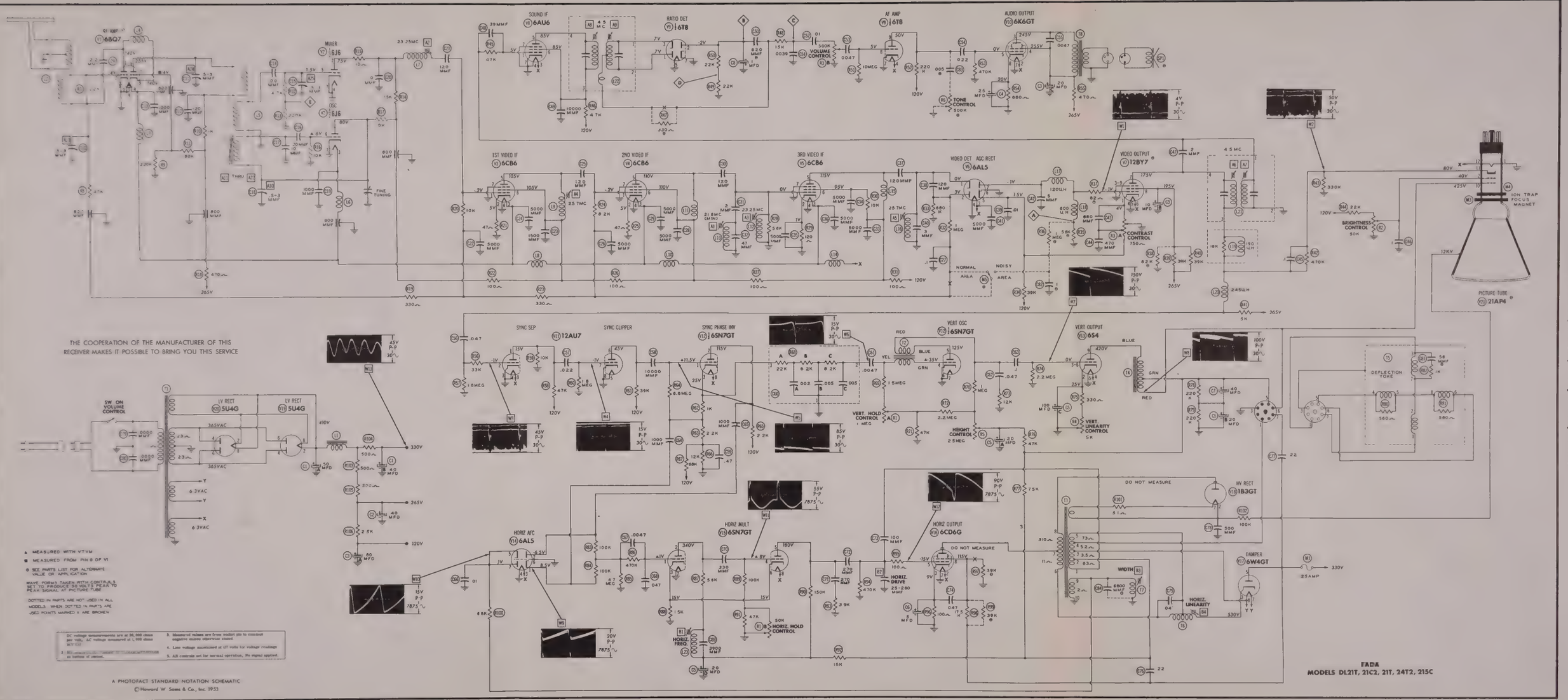

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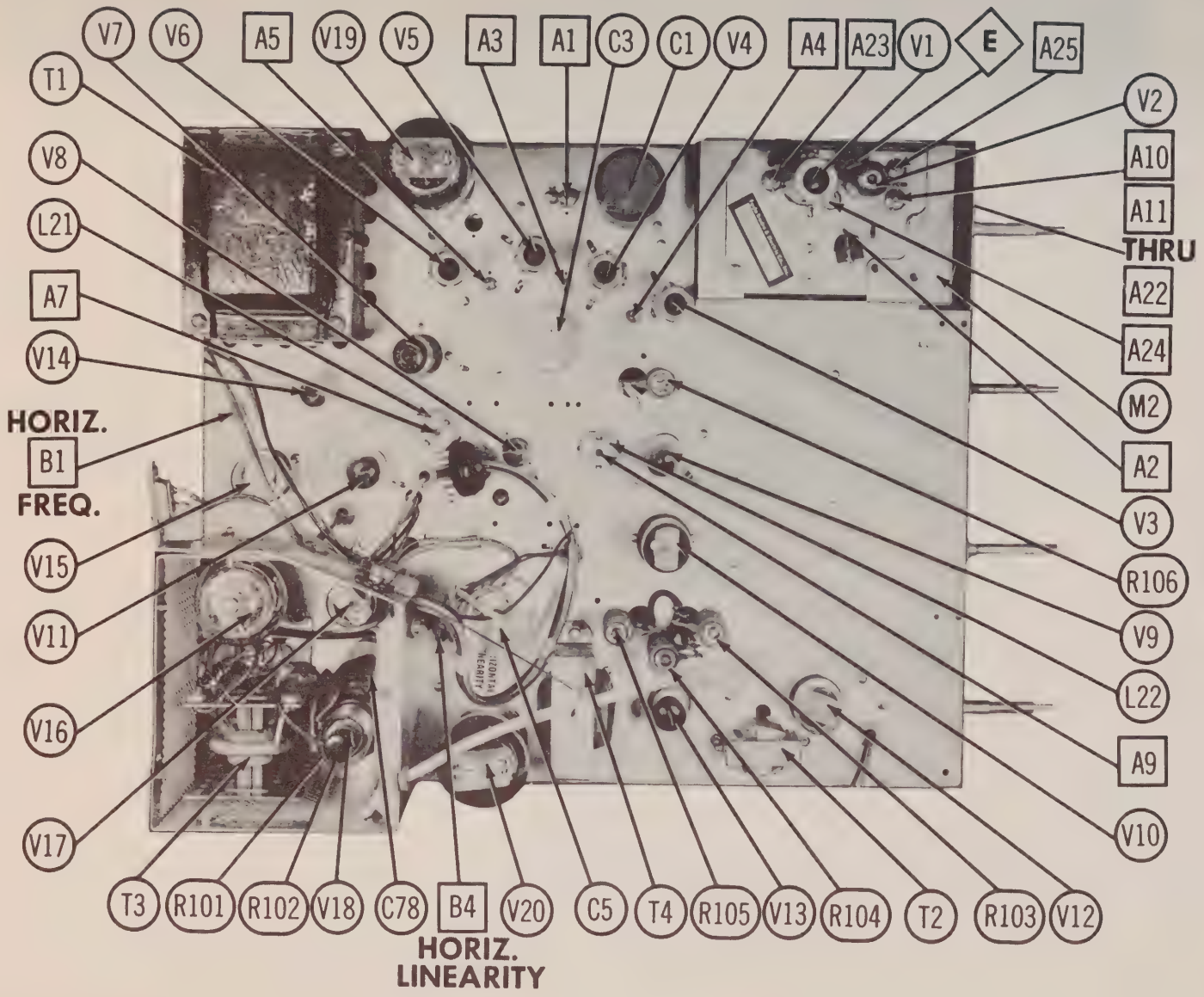
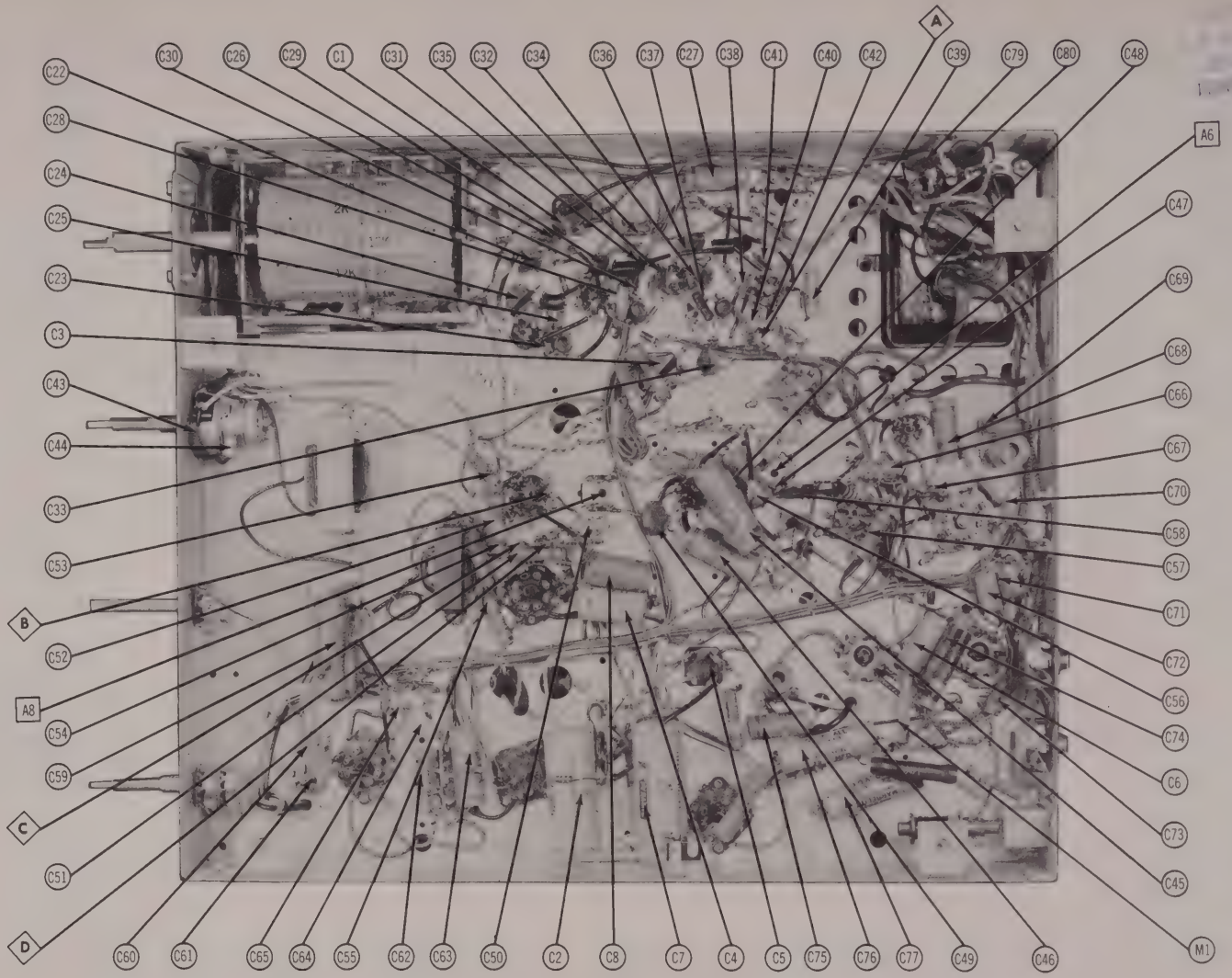
MODELS DL21T, 21C2, 21T, 24T2, 215C

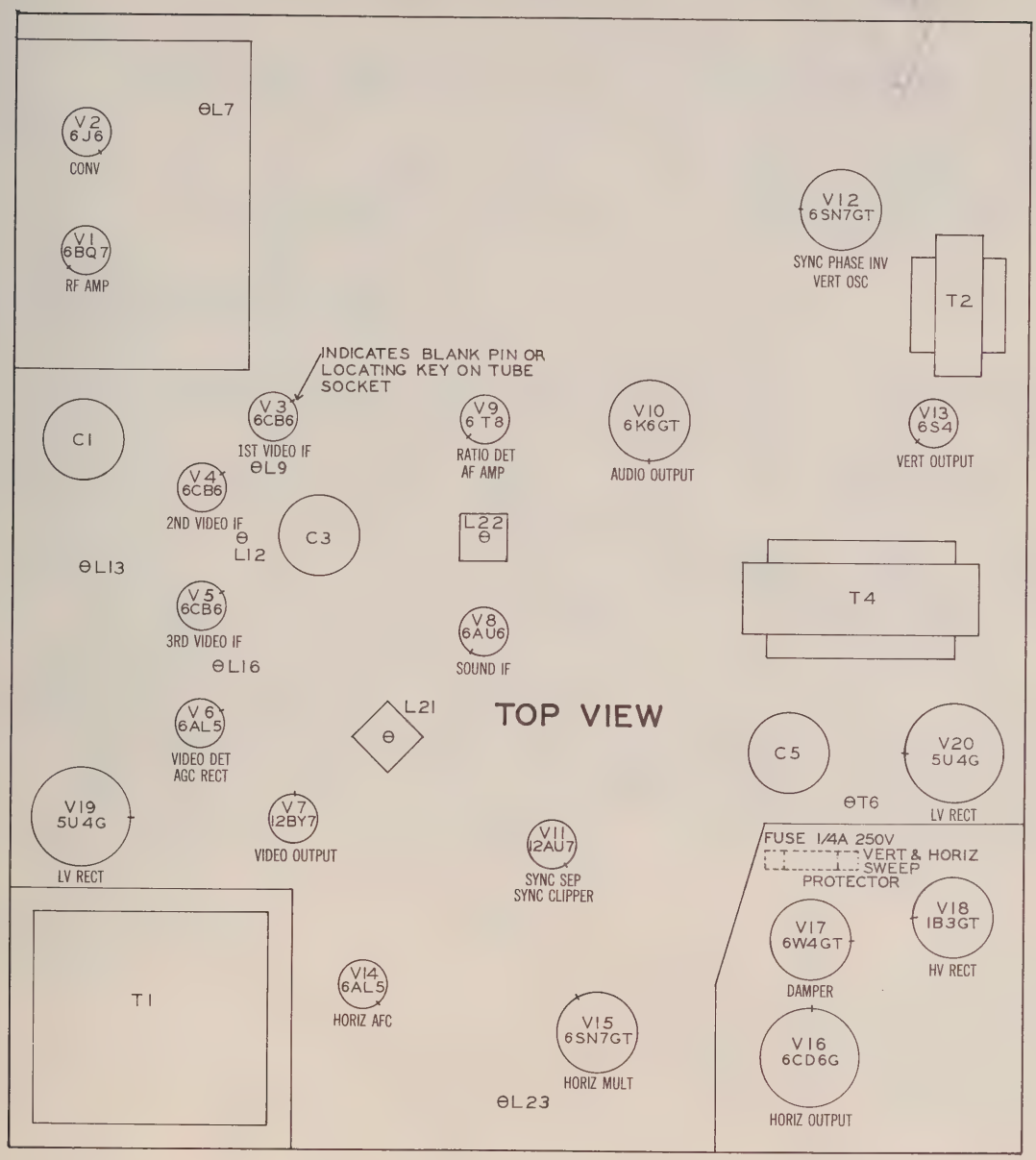


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V19. V20

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6, V7
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V7, V21
Has pic, ono sound-V8, V9, V10
Overloaded picture-V6

SYNC FAILURE
No vert. sync.-V12
No horiz. sync-V12, V14, V15
No vert. or horiz. sync.-V11, V12

SWEEP FAILURE
No raster , has wound-V15, V16, V17, V18, V21 Fuse (M1)
No vertical deflection-V12, V13
Poor vert. linearity or foldover-V12, V13
Poor horiz. linearity or foldover-V15, V16, V17
Narrow picture-V15, V16, V17, V18, V19, V20
Vert. off freq.-V12
Horiz. off freq.-V12, V14, V15

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis.
Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin removed. This will disable the local oscillator and reduce the possibility of erroneous indications. Connect the negative lead of a 4.5 volt battery to the junction of R23, R24 and C26. Connect the positive lead to chassis.
If the receiver model is one incorporating an AGC switch the white lead to the center terminal of the switch should be disconnected from the junction of R23, R24 and C26.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	21.6MC (Unmod)	Any	DC probe to point ◇A. Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	23.25MC	"	"	A2, A3	Adjust for maximum deflection. Attenuate generator output maintain approximately 2.5Volts at VTVM.
3.	"	"	25.7MC	"	"	A4, A5	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to an ungrounded shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.6MC 22.7MC 26.1MC	Any	Vert. amp. to point ◇A. Low side to chassis.		Check for response similar to Fig. 1. If necessary retouch A2 thru A5 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.001MFD	High side to pin 2 (grid) of 12BY7 (V7). (or pin 4 if 6AG7 is used). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point ◇B. Common to chassis.	A6, A7, A8	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to point ◇C. Common to point ◇B.	A9	Adjust for a zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD	High side to pin 2 (grid) of 12BY7 (V7). (or pin 4 if 6AG7 is used). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point ◇B. Low side to chassis.	A6, A7, A8	Disconnect stabilizer capacitor C2. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
6.	"	"	"	"	"	Vert. amp. to point ◇C. Low side to chassis.	A9	Reconnect capacitor C8. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Use 3 volt bias battery connected as under Video IF Alignment.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A10.
It should be noted that this is is an all channel oscillator circuit adjustment and should not be used to correct any individual channel.
If adjustment of A10 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point ◇A. Low side to chassis.	A11	Adjust to place sound marker in trap notch as in Fig. 4. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A12	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A13	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A14	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A15	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A16	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A17	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A18	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A19	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A20	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A21	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A22	

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Leave bias battery connected as under Oscillator Alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

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	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to point (E). Low side to chassis.	A23, A24, A25	Adjust for response similar to Fig. 5.
9.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 5. If markers fall below 70% on any channel make compromise adjustments of A23, A24 and A25 with channel switch set to that channel then check all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

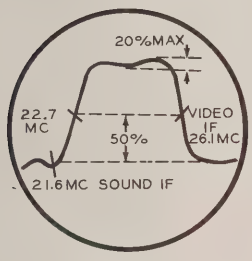


FIG. 1

FIG. 2

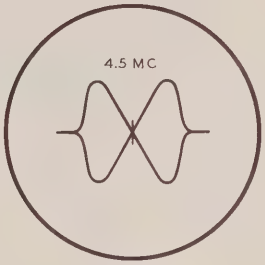


FIG. 3

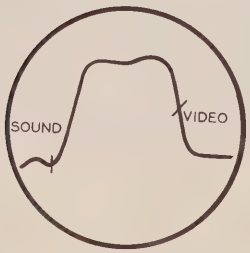


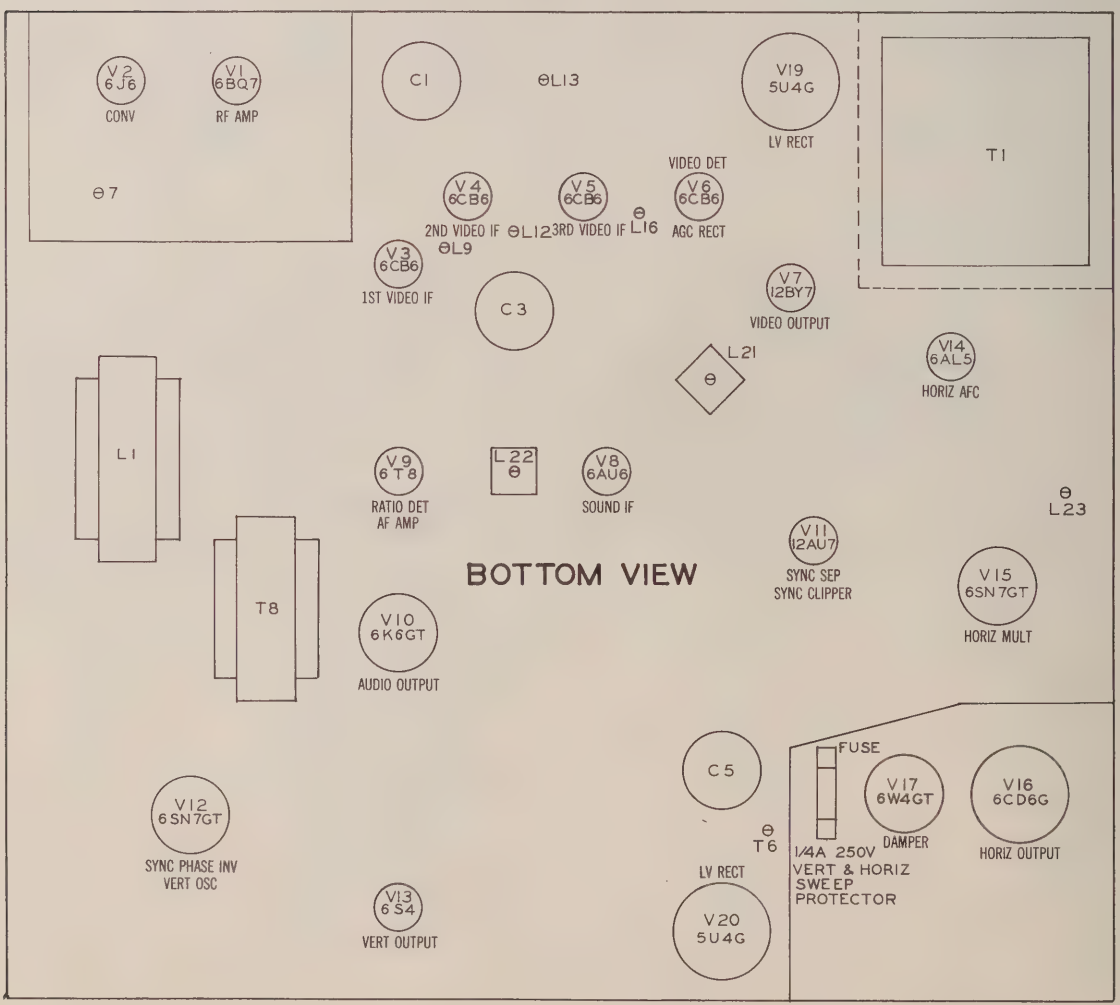
FIG. 4

FIG 5

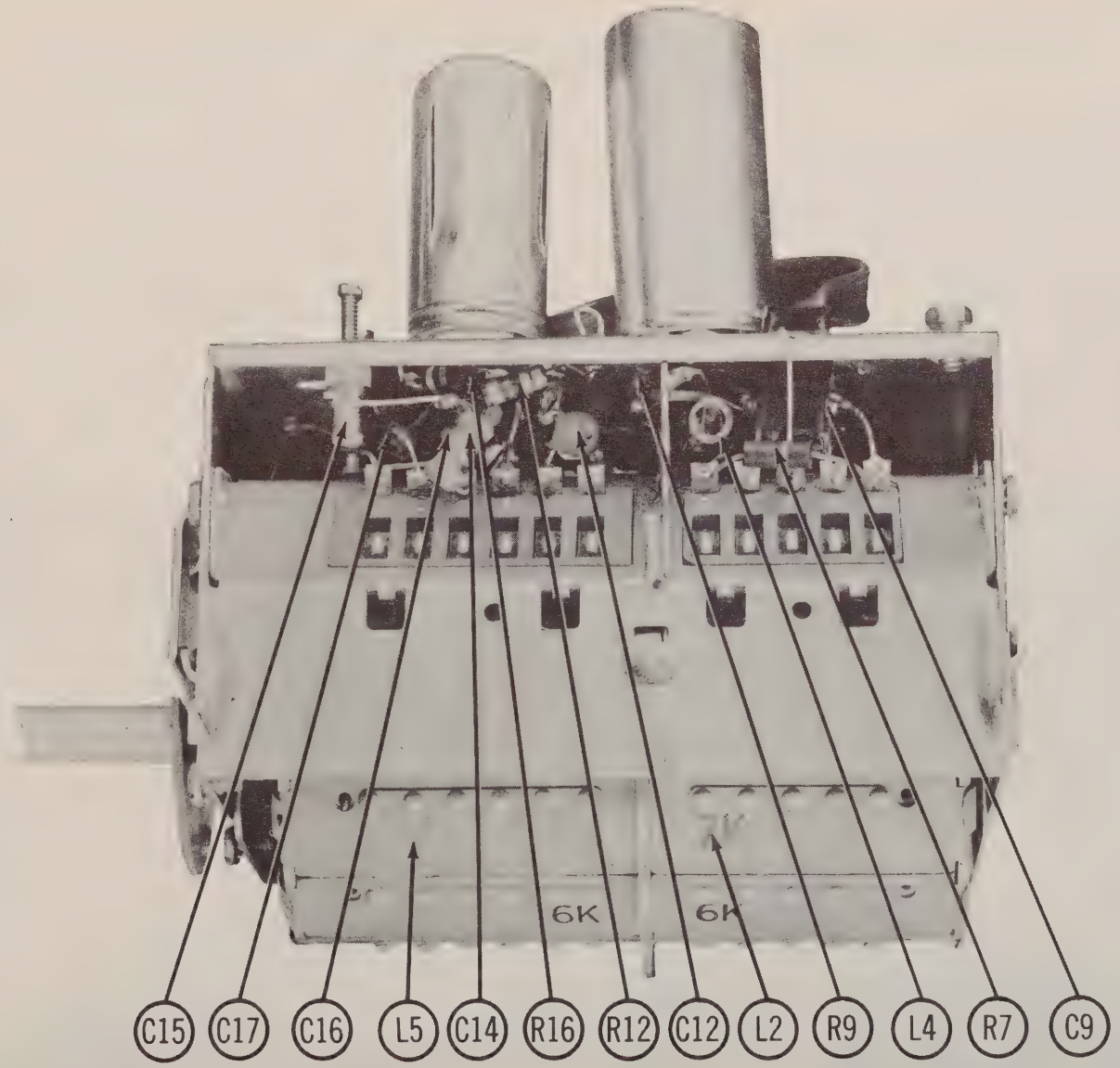
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	1.7Meg	0Ω	.1Ω	0Ω	†2.5KΩ	100KΩ	INF	0Ω
V 2	6J6	†14KΩ	†19KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	1.7Meg	47Ω	.1Ω	0Ω	†3.8KΩ	†3.8KΩ	0Ω		
V 4	6CB6	1.7Meg	47Ω	.1Ω	0Ω	†3.7KΩ	†3.7KΩ	0Ω		
V 5	6CB6	.2Ω	120Ω	.1Ω	0Ω	†3.6KΩ	†13KΩ	0Ω		
V 6	6AL5	.2Ω	680KΩ	.1Ω	0Ω	600Ω	0Ω	5.6KΩ		
V 7	12BY7	250Ω	5.6KΩ	0Ω	0Ω	0Ω	.1Ω	†6KΩ	†20KΩ	0Ω
V 8	6AU6	47KΩ	0Ω	.1Ω	0Ω	†8.2KΩ	†8.2KΩ	0Ω		
V 9	6T8	INF	44KΩ	INF	.1Ω	0Ω	INF	0Ω	10 Meg	†220KΩ
V 10	6K6GT	INF	.1Ω	†1.8KΩ	†1.5KΩ	470KΩ	INF	0Ω	680Ω	
V 11	12AU7	8.5KΩ	1.8Meg	0Ω	0Ω	0Ω	†42KΩ	1.8Meg	0Ω	.1Ω
V 12	6SN7GT	6.8Meg	†5.7KΩ	15KΩ	2.3Meg	#1.6Meg	0Ω	0Ω	.1Ω	
V 13	6S4	INF	2.2KΩ	2.2Meg	.1Ω	0Ω	2.2Meg	INF	INF	#9KΩ
V 14	6AL5	4.8Meg	4.8Meg	.1Ω	0Ω	6.8KΩ	0Ω	6.8KΩ		
V 15	6SN7GT	5.1Meg	#16KΩ	1.5KΩ	120KΩ	#165KΩ	1.5KΩ	0Ω	.1Ω	
V 16	6CD6GT	INF	.1Ω	100Ω	470KΩ	470KΩ	INF	0Ω	†14KΩ	Top Cap #16Ω
V 17	6W4GT	INF	INF	80KΩ	INF	†560Ω	†560Ω	#7Ω	#7Ω	
V 18	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap #317Ω
V 19	5U4G	INF	12KΩ	INF	23Ω	INF	23Ω	INF	12KΩ	
V 20	5U4G	INF	12KΩ	INF	23Ω	INF	23Ω	INF	12KΩ	
V 21	21AP4	0Ω	17KΩ	Pin 10 #7.5KΩ	Pin 11 180KΩ	Pin 12 .1Ω				

† MEASURED FROM PIN 8 OF V19 & PIN 2 OF V20.
# MEASURED FROM PIN 3 OF V17.



TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE

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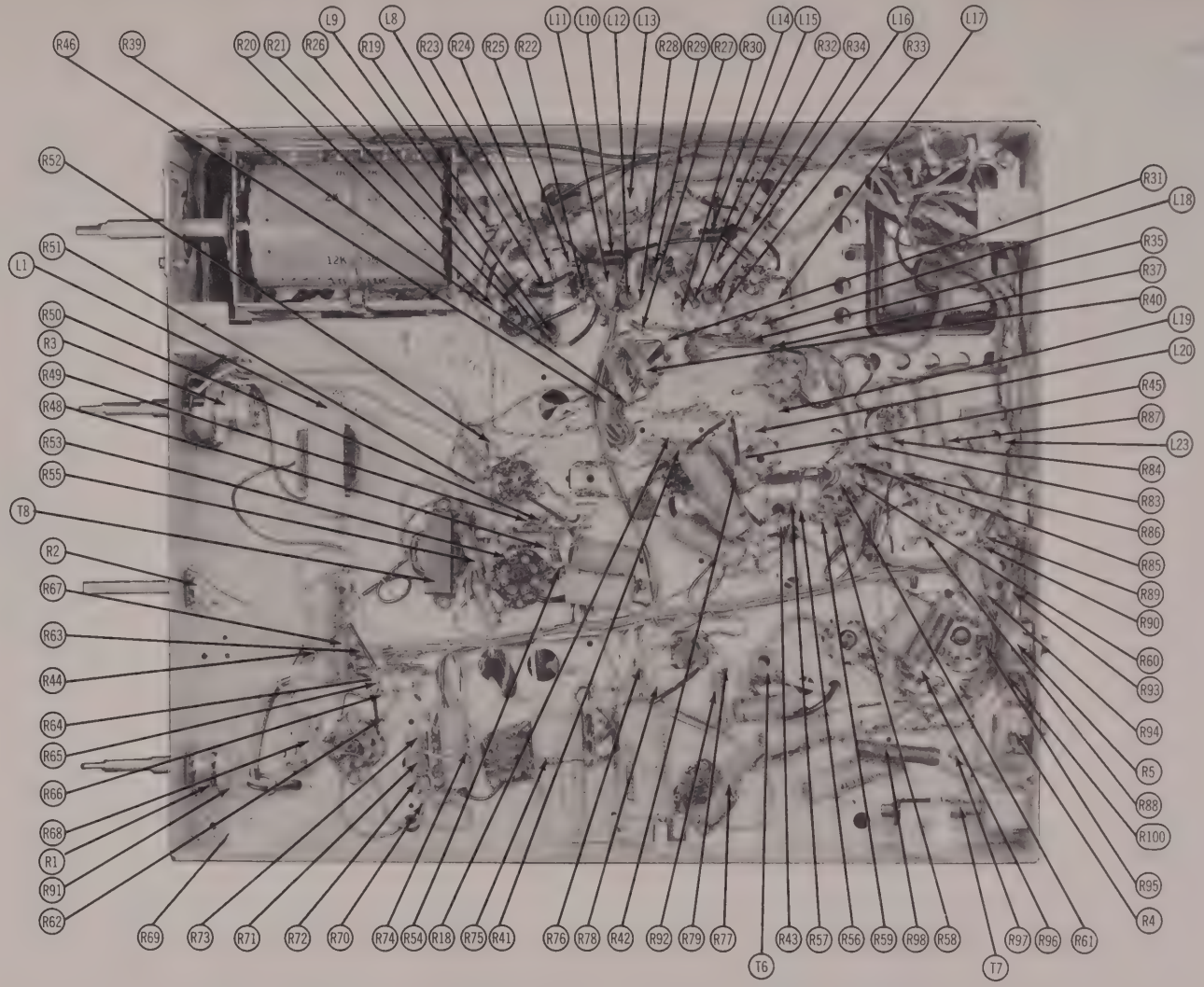
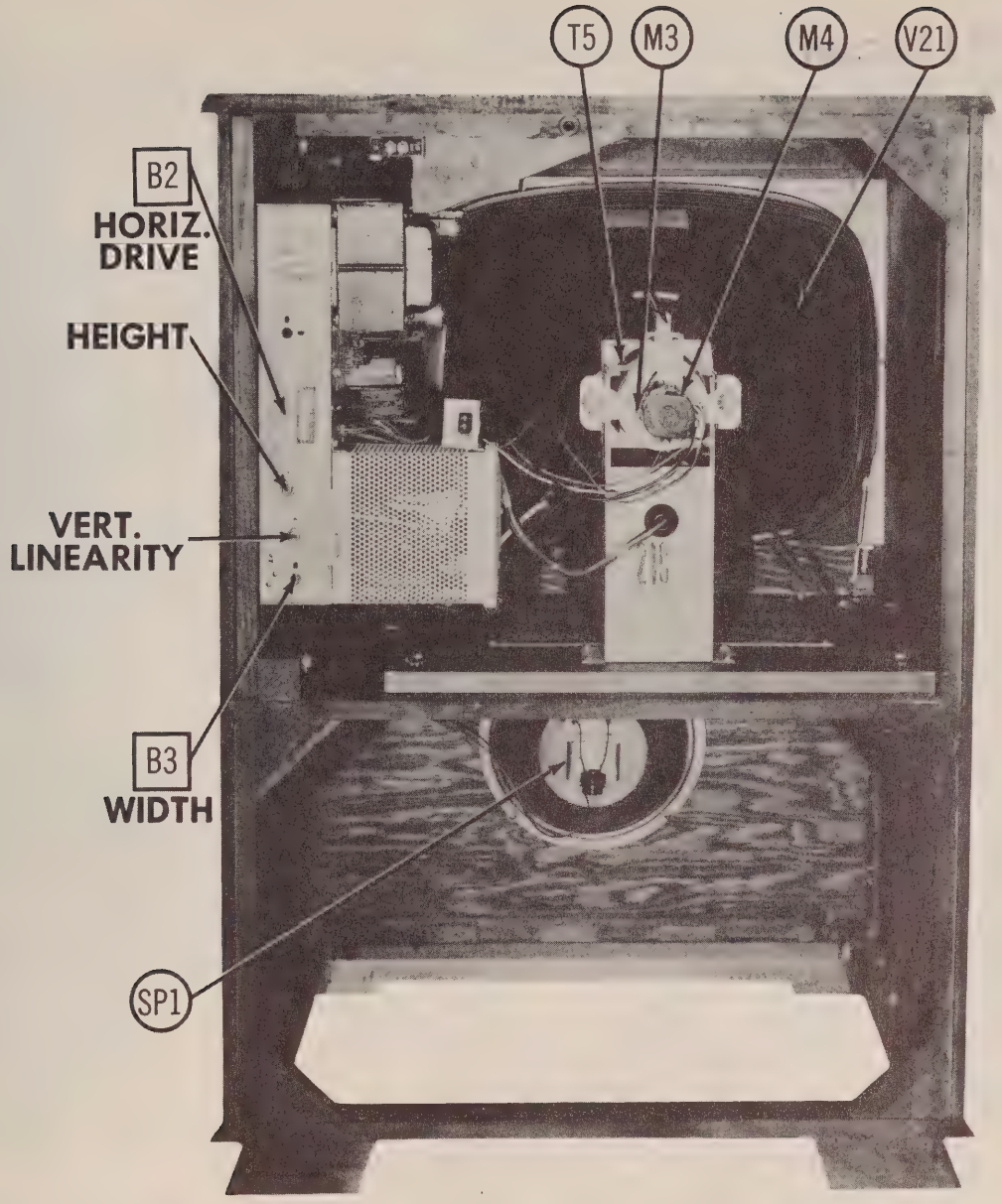
RF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tube in a TV station, preferably a test pattern.

Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) counter-clockwise as far as possible without the presence of a vertical white line or compression of the center of the picture.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug. (B4) for a picture that is symmetrical from left to right.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: FADA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1A	RF Amplifier	6BQ7	6BQ7	9AJ	
B	RF Amplifier	6BK7	6BK7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector-AGC Rectifier	6AL5	6AL5	6BT	
V7A	Video Output	12BY7	12BY7	9BQ	
B	Video Output	6AG7	6AG7	8Y	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Detector-AF Amplifier	6T8	6T8	9E	
V10	Audio Output	6K6GT	6K6GT	7S	
V11	Sync Separator-Sync Clipper	12AU7	12AU7	9A	
V12	Sync Phase Inv.-Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V13	Vert. Output	6S4	6S4	9AC	
V14	Horiz. AFC	6AL5	6AL5	6BT	
V15	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V16	Horiz. Output	6CD6G	6CD6G	9DT	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5U4G	5U4G	5T	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: FADA PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V21A	21AP4	21AP4	12D	
B	21EP4		12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FADA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	±50	475	22.79	AFH2-73		CO41		FP288	TVL-3843	
B	±40	475						TC82		
C2	40	450	22.82	PR3450/40		BR4045A		TC78	TVA-1712	
C3A	±80	350	22.80	AFH3-153		BO68		FP450	TVL-3727	
B	±10	350		PR3350/10		BR1035				
C	±20	450								
C4	25	50	22.68	PR250/25		BR255A		TC36	TVA-1306	
C5A	±20	450	22.81	AFH4-80		DO53		FP437	TVL-4740	
B	±20	450								
C	100	50								
D	±20	450								
C6	5	50	22.58	PR2150/4		BR550		TC30	TVA-1303	
C7	40	350	22.85	PR3450/40		BR4035		TC78	TVA-1611	
C8	1	150	22.70	PR2150/4		BR145		TC40	TVA-1402	
C9	2.2				TCZ-2.2		NP0K-2R2		5TCCB-V22	
C10	3-9				829-10					
C11	.5-3				829-3		CT565A			
C12	120			SII20	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C13	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C14	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C15	.5-3				829-3		CT565A			
C16	20			SI20NP0	TCZ-20		NP0K-200	ZT-542	5TCC-Q2	
C17	10			SI0N750	TCN-10		N750K-100	NT-541	5TCU-C1	
C18	.5-3				829-3		CT565A			
C19	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C20	10			SI0NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C21	120			SII20	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C22	5000		17,44	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C23	1500		17,45	SII500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C24	5000		17,44	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C25	120		17,106	SII20	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C26	5000		17,44	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C27	.1	200	12,49	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C28	5000		17,44	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C29	5000		17,44	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C30	120		17,106	SII20	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C31	2		17,127		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C32	47		17,130	SI47NP0	TCZ-47		NP0K-470	ZT-5447	5TCC-Q47	
C33	5000		17,44	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C34	5000		17,44	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C35	5000		17,44	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C36	5000		17,44	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C37	120		17,106	SII20	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C38	120		17,106	SII20	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C39	.01	400	12,73	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C40	3		17,131							
C41	5000		17,44	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C42	5		17,79	SI5	TCZ-4.7		GP1K-050	UC-555	5GA-V5	
C43	680		17,108	SI680	D6-681		GP2K-681	UC-5368	5GA-T68	
C44	470		17,107	SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C45	.1	600	12,60	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C46	.1	400	12,75	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C47	2		17,59							
C48	39		17,105	SI39	D6-390	5W5S4	GP1K-390	UC-5439	5GA-Q39	
C49	10000		17,80	BPD-01	DD-103	TM5S1	821-01	DC-5U	5HK-S1	
C50	620	500	17,125							Note 1
C51	.0039	400	12,71	P488-004	D6-392	PTE6D4	GP2-333-392	PT424	6TM-D4	
C52	.01	400	12,72	P488-01	D6-103	PTE4S1	GP2-333-103	PT401	4TM-S1	
C53	.0047	400	12,68	P488-0047	D6-472	PTE4D47	GP2-333-472	PT6247	6TM-D47	
C54	.022	400	12,83	P488-022	DF-203	PTE4S22		PT422	4TM-S22	

CAPACITORS (CONT.)

ITEM No	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FADA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C55	.0047	400	12,68	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C56	.047	400	12,67	P488-047	DF-503	PTE4S47		PT447	4TM-S47	
C57	.022	400	12,83	P488-022	DF-203	PTE4S22		PT422	4TM-S22	
C58	10000		17,80	BPD-01	DD-103	TM5S1	821-01	DC-5U	5HK-S1	
C59	.47	200	12,82	P288-47		PJ3P5		PT405	2TM-P47	
C60A	.002		P688-002			PTE6D5		PT602		
B	.005		P686-005	±PC-100		PTE6D5	±1405-01	PT625	±10C1	
C	.006		P686-005			PTE6D5		PT625		
C61	.0047	600	12,83	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C62	.047	400	12,67	P488-047	DF-503	PTE4S47		PT447	4TM-S47	
C63	.1	400	12,75	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C64	1000		17,105	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C65	1000		17,106	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C66	.01	400	12,72	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-P1	
C67	.0047	400	12,68	P488-0047	D6-472	PTE4D47	GP2-333-472	PT6247	6TM-D47	
C68	.047	400	12,67	P488-047	DF-503	PTE4S47		PT447	4TM-S47	
C69	3900	500	17,113	1464-004		1DR5D5		MCB463	MS-24	
C70	330	500	17,69	1469-00035			5R5T3	MCB241	MS-33	
C71	270	500	17,123	1469-0003			5R5T3	MCB241	MS-33	
C72	270	500	17,123	1469-0003			5R5T3	MCB241	MS-33	
C73	100	1000	17,129	1468-HV-0001				MCK-310	10GAB-T1	
C74	.047	600	12,68	P688-047	DF-503	PTE6S47		PT647	6TM-S47	
C75	.047	400	12,67	P488-047		PTE4S47		PT447	4TM-S47	
C76	.22	400	12,77	P488-22		PTE4P22		PT4025	4TM-P22	
C77	.22	400	12,77	P488-22		PTE4P22		PT4025	4TM-P22	
C78	500	20000	17,116	HV20C	TV3-502	MM-C20T5	413-501		20DK-T5	
C79	10000		17,136	BPD-01	DD-103	TM5S1	821-01	DC-5U	5HK-S1	
C80	10000		17,136	BPD-01	DD-103	TM5S1	821-01	DC-5U	5HK-S1	
C81	56	1500	17,132							Note 2
C82	.1	200	12,49	P288-1	DF-104	PJ2P1		PT401	2TM-P1	Note 3
C83	.005	600	12,68	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	Note 3
C84	6800		17,35							Note 3

* Items C60A, C60B, C60C, R68A, R68B, R68C are combined in one unit.
Note 1. With Ratio Detector Trans. part #37,253, C50 is 620MMF
With Ratio Detector Trans. part #37,330, C50 is 330MMF
Note 2. When using Yoke part #37,275, C81 is 56MMF
When using Yoke part #37,265, C81 is 43MMF
Note 3. Not used in Model 215C

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FADA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	52.66	QJ-168 *	RTV-110	SBB-510	UF16L †† UR54L ↑	Vert. Hold - Panel Horiz. Hold - Rear
B	50KΩ	½						
R2A	50KΩ	1	52.69	QU-123	AG-44-B	B-31	U-35	Brightness - Note 1
B	Shaft		Not Req.	Not Req.	FB-3	Not Req.	Not Req.	Attach to R2A
R3A	750Ω	2	52.64	QJ-270 **	RTV-109		WF75L-T25L	Contrast - Tapped ⑥ 500Ω Wire wound - Panel
B	500KΩ	½					UR55A ↑	Volume-Rear
C	Switch						US-58	Attach to R3B
R4A	5000Ω	2	52.68	WK-5000	A43-5000	VK-135	R5000L	Vert. Linearity-wire wound
B	Shaft		Not Req.	Not Req.	FK3-1/4	Not Req.	Not Req.	Attach to R4A
R5A	2.5Meg	½	52.24	QU-239	AG-84-B	AB-83	SU-585	Height
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R5A
R6	500KΩ	½	52.70					Tone - Note 2

Note 1. Some models use alternate control part No. 52.70 in this application.
Note 2. Not used in Model 215C.
* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B11-137 & P1-126 (Panel)
B11-123 & R1-212 (Rear).
** CONCENTRIKIT EQUIVALENT-KIT K-3, BASE ELEMENTS & SHAFTS W17-105X & P4-124 (Panel)
B13-123 & R1-213 (Rear) & SWITCH 78-1.
†† UNIVERSAL REPLACEMENT (MALLORY EXACT DUPLICATE PART NO. UE160).
† UNIVERSAL REPLACEMENT (MALLORY EXACT DUPLICATE PART NO. UE22WS).

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: FADA PART No.	IRC PART No.	NOTES
R7	22KΩ	½		BTS-22K	
R8	47KΩ	½		BTS-47K	
R9	220KΩ	½			
R10	1000Ω	½		BTS-1000	
R11	180KΩ 5%	½			
R12	4700Ω	½		BTS-4700	
R13	220KΩ	½			
R14	15KΩ	½			
R15	100Ω	½			
R16	10KΩ	½		BTS-10K	
R17	10KΩ	½		BTS-10K	
R18	470Ω	1	32,173	BTS-470	
R19	330Ω	½	32,67	BTS-330	
R20	10KΩ	½	32,11	BTS-10K	
R21	47Ω	½	32,197		
R22	100Ω	½	32,2	BTS-100	
R23	330Ω	½	32,67	BTS-330	
R24	8200Ω	½	32,77		
R25	47Ω	½	32,197		
R26	100Ω	½	32,2	BTS-100	
R27	100Ω	½	32,2	BTS-100	
R28	5600Ω	½	32,126	BTS-5600	
R29	120Ω	½	32,118	BTS-120	
R30	10KΩ	½	32,11	BTS-10K	
R31	100Ω	½	32,2	BTS-100	
R32	1Meg	½	32,33	BTS-1Meg	
R33	680KΩ	½	32,35	BTS-680K	
R34	39KΩ	½	32,103	BTA-39K	
R35	5600Ω	½	32,77	BTS-5600	Note 1
R36	1Meg	½	32,33	BTS-1Meg	Note 3
R37	32Ω	1	32,125		Note 2
R38	82KΩ	½	32,412	BTA-82K	Note 4

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: FADA PART No.	IRC PART No.	NOTES
R39	39KΩ	2	32,008	BTB-39K	
R40	39KΩ	2	32,008	BTB-39K	
R41	5000Ω	10	117,80	1-3/4A-5000	
R42	470KΩ	½	32,93	BTS-470K	
R43	330KΩ	½	32,206	BTS-330K	
R44	22KΩ	½	32,183	BTS-22K	
R45	47KΩ	½	32,15	BTS-47K	
R46	4700Ω	½	32,74	BTA-4700	
R47	330Ω	½	32,07	BTS-330	Note 5
R48	15KΩ	½	32,12	BTS-15K	
R49	22KΩ	½	32,13	BTS-22K	
R50	22KΩ	½	32,13	BTS-22K	
R51	10Meg	½	32,99	BTS-10Meg	
R52	220KΩ	½	32,18	BTS-220K	
R53	470KΩ	½	32,93	BTS-470K	
R54	680Ω	1	32,115	BTA-680	
R55	470Ω	1	32,399	BTA-470	
R56	33Kd	½	32,14	BTS-33K	
R57	1.8Meg	½	32,208	BTS-1.8Meg	
R58	47KΩ	½	32,15	BTS-47K	
R59	10KΩ	½	32,11	BTS-10K	
R60	1.8Meg	½	32,208	BTS-1.8Meg	
R61	39KΩ	1	32,103	BTA-39K	
R62	1000Ω	½	32,8	BTS-1000	
R63	2200Ω	1		BTA-2200	
R64	6.8Meg	½	32,46	BTS-6.8Meg	
R65	2200Ω	1	32,60	BTS-2200	
R66	12KΩ	½	32,143	BTS-12K	
R67	68KΩ	1	32,411	BTA-68K	
R68A	22KΩ	½	+167,1	BTS-22K	
B	8200Ω	½		BTS-8200	
C	4200Ω	½		BTS-8200	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: FADA PART No.	IRC PART No.	NOTES
R69	1.5Meg	½	32,147	BTS-1.5Meg	
R70	1Meg	½	32,33	BTS-1Meg	
R71	47KΩ	½	32,15	BTS-47K	
R72	2.2Meg	½	32,34	BTS-2.2Meg	
R73	12KΩ	½	32,142	BTS-12K	
R74	2.2Meg	½	32,34	BTS-2.2Meg	
R75	330Ω	½	32,77	BTS-330	
R76	47KΩ	½	32,15	BTS-47K	
R77	750Ω	10	117,81	1-3/4A-7500	
R78	220KΩ	½	32,18	BTS-220K	
R79	220KΩ	½	32,18	BTS-220K	
R99	39KΩ	½	32,68	BTS-560	
R100	680Ω	½	32,68	BTS-580	
R82	1000Ω	½	32,8	BTS-1000	
R83	100KΩ	½	32,89	BTS-100K	
R84	100KΩ	½	32,89	BTS-100K	
R85	4.7Meg	½	32,98	BTS-4.7Meg	
R86	470KΩ	½	32,92	BTS-470K	
R87	5600Ω	½	32,126	BTS-5600	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: FADA PART No.	IRC PART No.	NOTES
R88	1500Ω 5%	½	32,285	BTS-1500 5%	
R89	100KΩ	½	32,89	BTS-100K	
R90	150KΩ	½	32,90	BTS-150K	
R91	47KΩ	½	32,15	BTS-47K	
R92	15KΩ	½	32,655	BTB-15K	
R93	3900Ω	½	32,302	BTS-3900	
R94	470KΩ	½	32,92	BTS-470K	
R95	100Ω	½	32,2		
R96	100Ω	2	32,635	BW-2-100	
R97	39KΩ	2	32,660	BTB-39K	
R98	17.5KΩ	10	117,71	1-3/4A-17.5K	
R99	39KΩ	2	32,600	BTB-39K	
R100	680Ω	½	32,10	BTS-6800	
R101	5.1Ω	½	32,137		
R102	100KΩ	1	32,373		
R103	500Ω	20	117,74	2D-500	
R104	500Ω	20	117,74	2D-500	
R105	500Ω	20	117,74	2D-500	
R106	2500Ω	25	117,23	4E-2500	

* Items R68A, R68B, R68C, C60A, C60B, C60C are combined in one unit.
Note 1. Some Models use a 8200Ω resistor in this application.
Note 2. Some Models use a 120Ω resistor in this application.
Note 3. Not used in Model 215C
Note 4. Some Models use a 39KΩ resistor in this application. Not used when C3B is rated ⑤ 350 volts
Note 5. Used only when Ratio Det. Trans. #37,230 is used.
Note 6. Used only on Model 24T2.
Note 7. Not used in Model 24T2.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: FADA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE NO.
T1	117VAC @ 2.26A	730VCT @ .240DC	5VAC @ 6A	6.3VAC @ 1.2A SEC. 4 6.3VAC @ 8.5A	42.61	P-8186 ① ④	P-3059 ③	TP-380	R-37BC	20TF10

① Drill new mounting holes.
② Parallel the 6.3VAC 5A windings and use as SEC 4
③ Parallel the 5 volt windings and use as SEC 2

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: FADA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE NO.	NOTES
T2	130Ω	100Ω	42.53	A-8111	A-3000	TBO-5 ①	A-97X		Vert. Osc. Trans.
T3	310Ω tap @ 11Ω	10Ω tap ⑤ .03Ω, 4.1Ω, 9.3Ω SEC. 2 21Ω SEC. 3 0Ω	37,264	A-8130 ② ③	HVO-7 ④ ⑤	TFB-5 ④	D-14 ⑦		Horiz. Output Trans.
T4	1450Ω		42.65	A-8141	A-3039	TSO-12	A-104X		Vert. Output Trans.
T5A	19Ω tap @ 5.3Ω		37,275 ①	DY-9A	MDF-70	TY-3	Y-17		Horiz. Deflection Coils
B	60Ω		37,265 ① ⑤						Vert. Deflection Coils
T6	5.4Ω tap @ 1.4Ω		37,244			TL-3			Horiz. Lin. Coil
T7	2.3Ω		37,248		MWC-2 ⑧				Width Coil

① Drill one new mounting hole.
② Use installation schematic # 3 and 5A.
③ Use with width coil WC-5
④ Use with width coil MWC-1
⑤ Use installation schematic #3
⑥ Use width coil (with AGC winding) with approximate range of 4-29 Millihenries
⑦ Use with width coil WC-11
⑧ Enlarge mounting hole.
⑨ Alternate deflection yoke.
⑩ Horiz. Shunt cap is 56MMF
⑪ Horiz. Shunt cap is 43MMF

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI	RATING: DC RES. SEC.	REPLACEMENT DATA: FADA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T8	4.5KΩ	3.7Ω	375Ω	1.4Ω	42.27	A-3877	A-2930	RO-8	S-3X	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: FADA PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	10"	PM	3.7Ω	107,47 104,46 ① 107,53 ②	10J11	10A31	① 6" PM Speaker used on Models DL21T & 21T ② Speaker used on Model 24T2

PARTS LIST AND DESCRIPTIONS

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	FADA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.240ADC	60Ω	1.5 Hy	42.56	C-2326 ①	C-2996 ①	TR-1733 ①	C-17X

① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	FADA PART No.	MILLER PART No.	
L2	Ant. Coils	0Ω CT	0Ω			
L3	Fil. Choke	0Ω				
L4	Neutralizing Coil	0Ω				
L5	RF, Mixer Grid & Osc. Coils	0Ω				
L6	Fil. Choke	0Ω				
L7	1st. Video IF	1Ω				
L8	Fil. Choke	0Ω		37.89	6175	
L9	2nd. Video IF	.2Ω		37.99	6188 ■	
L10	Fil. Choke	0Ω		37.89	6175	
L11	RF Choke	1.8Ω		37.197	4612	13 Microhenries
L12	3rd. Video IF	.2Ω		37.99	6189 ■	
L13	Sound Trap	0Ω		37.268	6171	
L14	Fil. Choke	0Ω		37.89	6175	
L15	RF Choke	1.8Ω		37.197	4612	13 Microhenries
L16	4th. Video IF	.2Ω		37.99	6188 ■	
L17	Series Peaking Coil	5Ω		37.234		120 Microhenries
L18	Shunt Peaking Coil	20Ω		37.235	4650	600 Microhenries
L19	Series Peaking Coil	6.6Ω		37.236	6180 †	190 Microhenries wound on 18KΩ resistor.
L20	Shunt Peaking Coil	11Ω		37.237	6181	245 Microhenries
L21	Sound IF	2Ω	2Ω	37.252	3203	
L22	Ratio Det.	5.8Ω	2Ω CT	37.253 *	3205	Tertiary Winding .9Ω
L23	Horiz. Osc.	45Ω		37.233	6210	

* Alternate Ratio Det. part #37.230
■ Enlarge mounting hole.
† Parallel with 18KΩ resistor.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FADA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG P/T	1/4A 250V			318.250 (3AG-1/4A P/T)		GJV 1/4	

MISCELLANEOUS

ITEM No.	PART NAME	FADA PART No.	NOTES
M2	RF Tuner	42.71	Complete with tubes
M3	Focus Magnet	112.38	
M4	Ion Trap	112.23	
M5	Switch		AGC Selector, Models DL21T, 21T, 21C2 and 24T2
B2	Trimmer	132.18	Horiz. Drive (25-280MMF)
	Knob	142.91	Channel Selector
	Knob	142.92	Fine Tuning
	Knob	142.93	Off/On Volume- Horiz. Hold
	Knob	142.94	Contrast - Vert. Hold
	Knob	142.95	Brightness
	Safety Glass	92.403	Model 215C, 21C2
	Safety Glass	92.502	Model 24T2
	Safety Glass	92.533	Model 21T
	Safety Glass	92.537	Model DL21T
	Back Cover	97.379	Models 215C, 21C2
	Back Cover	97.460	Model 24T2
	Back Cover	97.485	Model 21T
	Back Cover	97.474	Model DL21T
	Mask	97.469-1	Model 215C
	Mask	97.469	Model 21C2
	Mask	97.459-1	Model 24T2
	Mask	97.483	Model 21T
	Mask	97.481	Model DL21T
	Cabinet	97.360	Models 215C, 21C2
	Cabinet	97.455	Model 24T2
	Cabinet	97.473	Model 21T
	Cabinet	97.472	Model DL21T

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

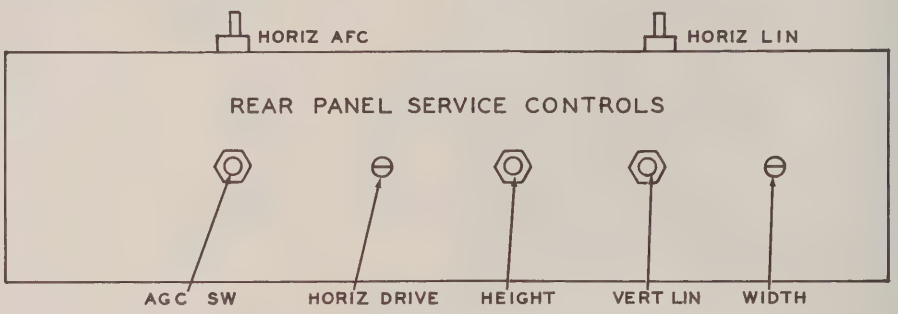
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the Horiz. Oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the horiz. hold control at the center of its range and adjust the horiz. frequency slug (L23) until picture synchronizes horizontally. (For location see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector buzz, adjust the Ratio Detector Secondary (L22) located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for Horiz. Sweep Circuit protection. (For location see tube).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 8 push on type control knobs from front panel.
2. Remove 11 wood screws. Remove rear cover.
3. Disconnect built in antenna. Remove 2 swood screws. Remove antenna bracket.
4. Disconnect speaker. Remove 4 speaker nuts. Remove speaker.
5. Disconnect yoke plug, CRT socket, HV lead.
6. Remove 2 chassis mounting bolts. Remove chassis mounting board.
7. Remove 4 chassis bolts. Remove chassis mounting board.

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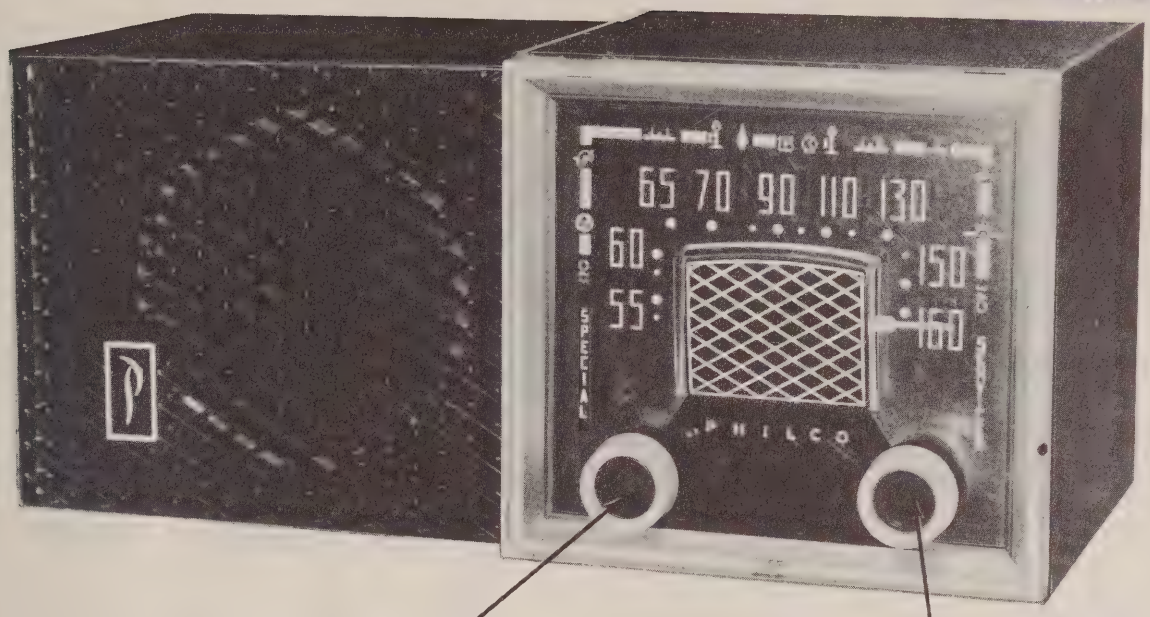
RTMA RADIO-TELEVISION MANUFACTURERS ASSOCIATION MEMBER

PHILCO
MODELS 53-950, 53-952, 53-954

PROPERTY OF
3924 [illegible] ST.
[illegible], COLORADO

PHILCO
MODELS 53-950, 53-952, 53-954



VOLUME CONTROL
ON-OFF SWITCH

TUNING CONTROL

PHILCO
MODELS 53-950, 53-952, 53-954

TRADE NAME	Philco Models 53-950, 53-952, 53-954
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC-DC Operated 2 Band AM Superheterodyne Receiver
TUBES (Six)	Types 6BJ6 RF Amp., 12BE6 Conv., 6BJ6 IF Amp., 6AQ6 Det.-AVC-AF Amp., 35C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC-DC
RATING	.25 Amp. @ 117 volts AC
TUNING RANGE—BROADCAST	540-1620 KC
SPECIAL SERVICES	1700-3400KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn tuning gang fully closed and set pointer to the left of "55" on the dial scale.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to B-.	455KC (400~Mod)	BC	Tuning gang fully open	Across Voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce modulation.
2.		Loop	1620KC	BC	Tuning gang .006" from fully open	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1520KC	BC	Tune for maximum signal	"	A6, A7	"
4.		"	580KC	BC	580KC	"	A8	Adjust for maximum output while rocking tuning gang. Repeat steps 3 and 4 until no further improvement can be made.
5.		"	3200KC	Special Services	Tune for maximum signal		A9, A10	Adjust for maximum output.
6.		"	1800KC		"		A11	Adjust for maximum output while rocking tuning gang. Repeat steps 5 and 6 for optimum results.

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PARTS LIST AND DESCRIPTIONS

PHILCO MODEL 53-950

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BJ6	6BJ6	7CM	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	6BJ6	6BJ6	7CM	
V4	Det-AVC-AF Amp.	6AQ6	6AQ6	7BT	
V5	Audio Output	35C5	35C5	7CV	
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	40	150	30-2575-27	PRS150/40-40-40		EDL444-15		3N536	TVA-3451	Orange Red Blue
B	30	150								
C	30	150								
C2	.05	200	30-4650-45	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	.05	200	30-4650-45	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C4	865	500	30-1220-68							
C5	47	500	60-00475420	1468-00005	D6-470	5W5Q5	GP1K-470		1FM-45	
C6	7.5		30-1224-65							
C7	.05	200	30-4650-45	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C8	220		62-122001001	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C9	2000		30-1238-8	BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C10	5000		30-1238-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C11A	.005									
B	250		♦30-6001		♦PC-70		♦1406-01		♦104C4	
C										
C12	.022	600	30-4650-43	P688-022		PTE6S22			6TM-S22	
C13	.047	400	30-4650-45	489ZGXY-05		PJ4S47		PT4147	4TM-S47	
C14	.2	400	30-4644							

♦ Items C11A, C11B, C11C, R12A, R12B are combined in one unit.
When replacing with separate units, C11B and C11C should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	33-5566-43	Q13-133	AG-60-Z	B-60-S	U-48	Volume - Note
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

Note . Model No. 53-952 uses alternate control (Part No. 33-5566-46).

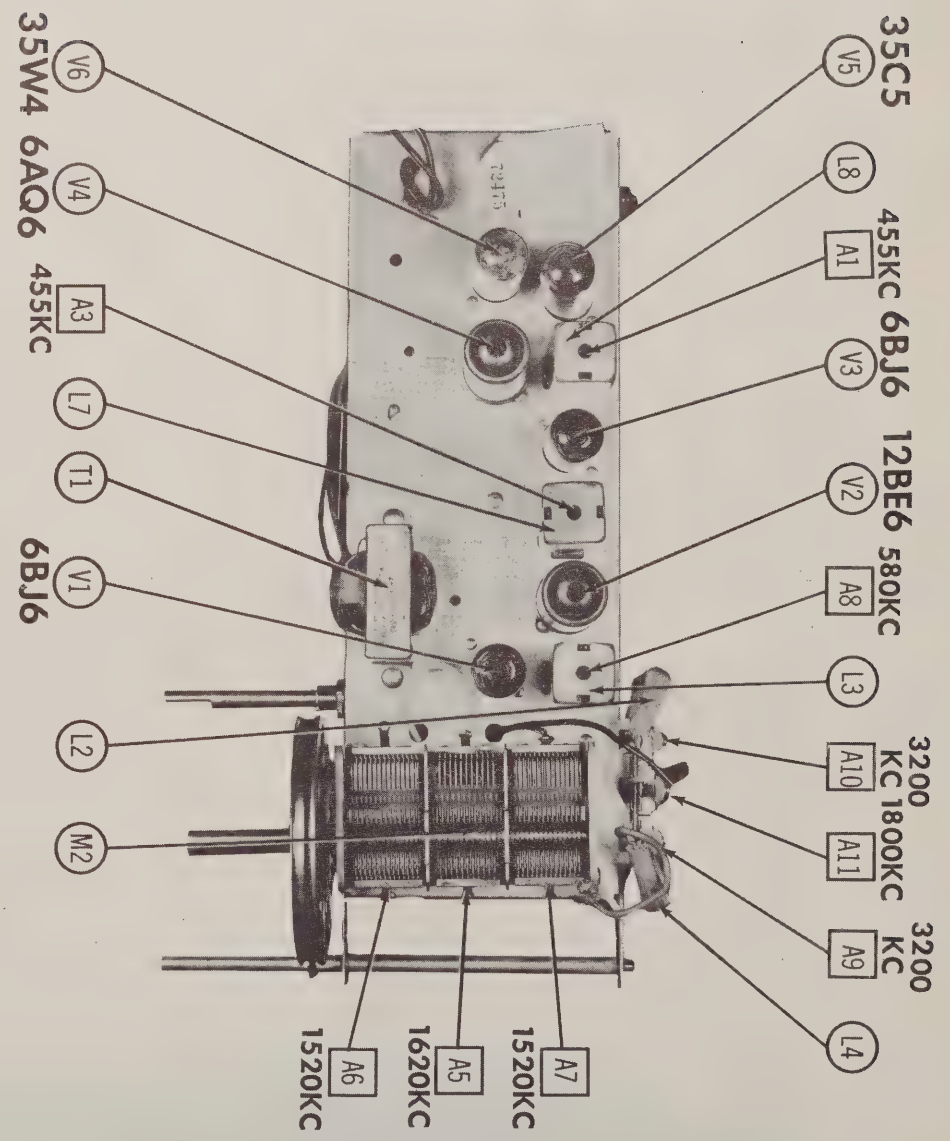
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PHILCO PART No.	IRC PART No.	
R2	10KΩ	½	66-3108340	BTS-10K	
R3	4.7Meg	½	66-5478340	BTS-4.7Meg	
R4	22KΩ	½	66-3228340	BTS-22K	
R5	2.2Meg	½	66-5228340	BTS-2.2Meg	
R6	2.2Meg	½	66-5228340	BTS-2.2Meg	
R7	2.2Meg	½	66-5228340	BTS-2.2Meg	
R8	180Ω	½	66-1188340	BTS-180	
R9	2200Ω	½	66-2228340	BTS-2200	
R10	39KΩ	½		BTS-39K	Note

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PHILCO PART No.	IRC PART No.	
R11	10 Meg	½	66-6108340	BTS-10 Meg	
R12A	500KΩ	½			
B	500KΩ	½	♦ 30-6001		
R13	150Ω	1	66-1154340	BTA-150	
R14	220Ω	1	66-1224340	BTA-220	
R15	1200Ω	½	66-2128340	BTS-1200	
R16	*	*	33-1343-3		
R17	150KΩ	½	66-4158340	BTS-150K	

Note . Some models use a 47KΩ resistor in this application.
♦ Items R12A, R12B, C11A, C11B, C11C are combined in one unit.
* Special resistor -100Ω Hot, 800Ω Cold.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.6KΩ	3.3Ω	324Ω	.95Ω	32-8310-7	A-3876	A-2928	RO-302	S-1X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.3Ω	36-1625-22	ST-105 Mod. P5-X	5A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	PHILCO PART No.	MILLER PART No.	
L1	Loop Ant.	3.9Ω		76-7881*		Part No. Includes Cabinet Back
L2	SW Ant. Coil	2Ω		32-4561-4		
L3	BC RF Coil	105Ω	4.8Ω	32-4399-7A		
L4	SW RF Coil	2Ω		32-4561-4		
L5	BC Osc.Coil	1.7Ω	7Ω	32-4453-2		
L6	SW Osc.Coil	3Ω		32-4562-1		
L7	Input IF	18.5Ω	12Ω	32-4160A	12-CI	
L8	Output	15Ω	14.5Ω	32-4240A	12-C6	

*Model 53-952 uses part No. 76-8068 & Model 53-954 uses part No. 76-2127-13 in this application.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					PHILCO PART No.		
M1	Bayonet	6-8	.250	Brown	34-2068		Type #47

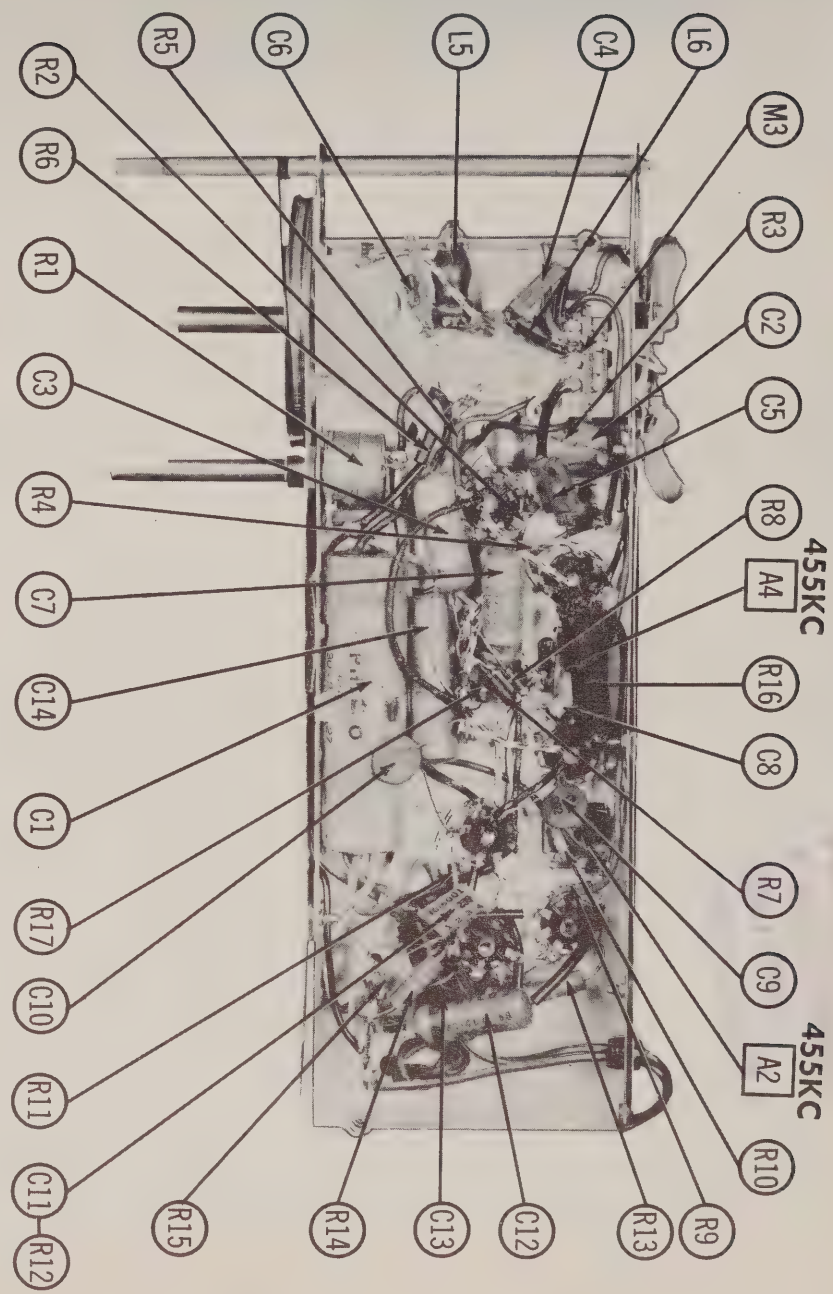
MISCELLANEOUS

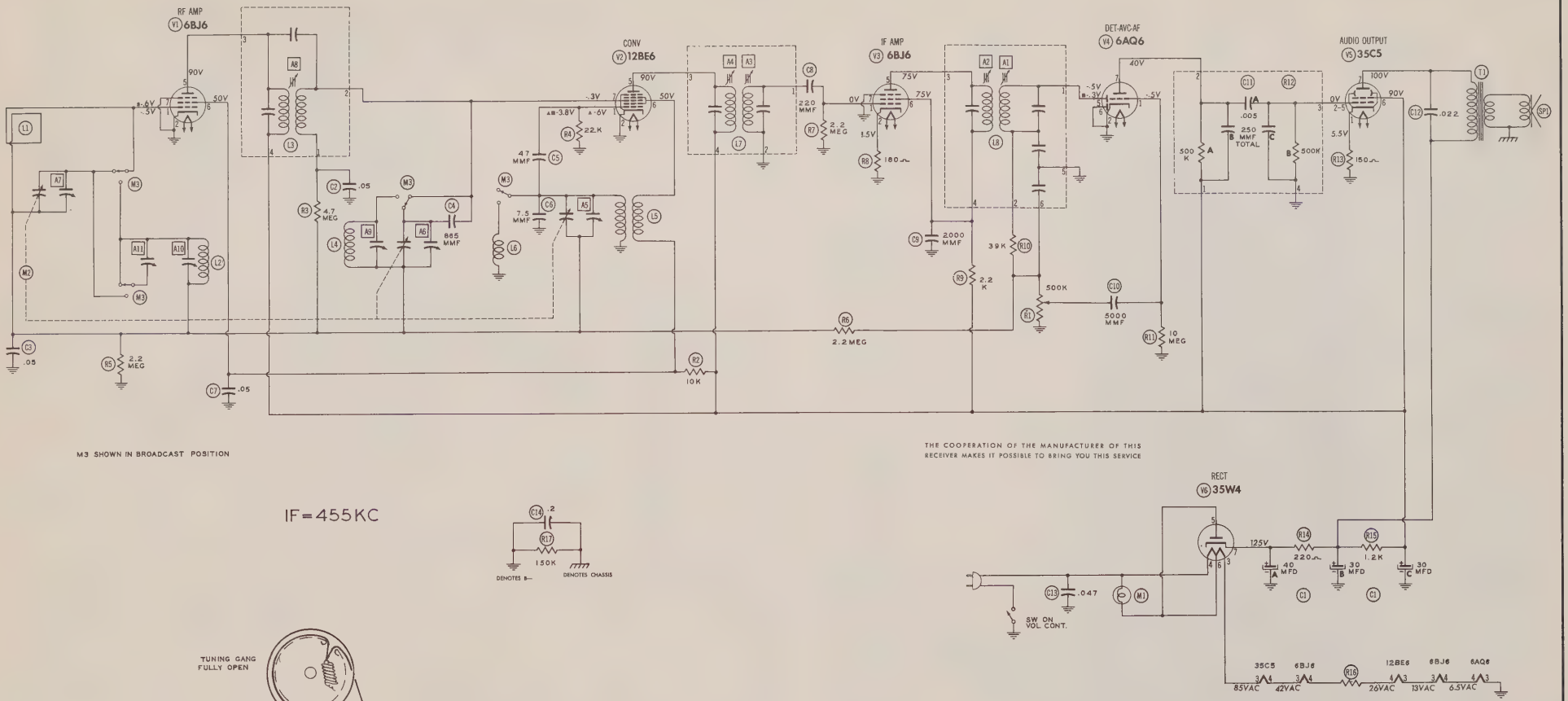
ITEM No.	PART NAME	PHILCO PART No.	NOTES
M2A	Tuning Capacitor	31-2771	Model 53-950 (30-488MMF, 30-488MMF, 12-168MMF)
B	Tuning Capacitor	31-2771-1	Models 53-952 and 53-954 (30-488MMF, 30-488MMF, 12-168MMF)
M3A	Switch	42-1893-3	Broadcast- Special Services, Model 53-950
B	Switch	42-1893-5	Broadcast-Special Services, Model 53-952
C	Switch	42-1893-4	Broadcast-Special Services, Model 53-954
A9, A10, A11	Trimmer Capacitor Assy.	31-6477-17	RF Trimmer, RF Padder, Mixer Trimmer (Special Services)
	Cabinet	10938	Mahogany, Model 53-950
	Cabinet	10938-2	Ivory, Model 53-950
	Cabinet	10963	Model 53-952
	Cabinet	10959	Mahogany, Model 53-954
	Cabinet	10959-1	Blond -Model 53-954
	Back & Loop Assy.	76-7881	Model 53-950
	Back & Loop Assy.	76-8068	Model 53-952
	Back	76-8063	Model 53-954 (Mahogany Cabinet)
	Back	76-8063-10	Model 53-954 (Blond Cabinet)
	Loop Assy.	76-2127-13	Model 53-954
	Scale	54-5152	Mahogany, Model 53-950
	Scale	54-5152-1	Ivory, Model 53-950
	Scale	54-5163	Model 53-952
	Pointer	56-9898	Model 53-950
	Pointer	56-5630-51	Model 53-952
	Pointer	56-5630-52	Model 53-954
	Knob	54-4718-39	Off/On Volume, Tuning; Model 53-950 (2 Used)
	Knob	54-6025	Off/On Volume, Tuning; Model 53-952 (2 Used)
	Knob	54-6019	Off/On Volume, Tuning; Model 53-954 (2 Used) (Mahogany)
	Knob	54-6019-1	Off/On Volume, Tuning; Model 53-954 (2 Used) (Blond)
	Knob	54-4998	Band Switch, All Models.

SET 200 FOLDER 6

PHILCO MODEL 53-950

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BJ6	1.2Meg	0Ω	14Ω	7Ω	† 1.4KΩ	† 11.4KΩ	0Ω
V 2	12BE6	22KΩ	0Ω	14Ω	26Ω	† 1.4KΩ	† 11.4KΩ	5.9Meg ■1.2Meg
V 3	6BJ6	2.2Meg	180Ω	787Ω	780Ω	† 3.6KΩ	† 3.6KΩ	0Ω
V 4	6AQ6	10Meg	0Ω	0Ω	7Ω	490KΩ	0Ω	† 500KΩ
V 5	35C5	150Ω	500KΩ	820Ω	787Ω	500KΩ	† 1.4KΩ	† 544Ω
V 6	35W4	0Ω	INF	820Ω	852Ω	845Ω	845Ω	2Meg

ALL MEASUREMENTS TAKEN IN "BROADCAST" POSITION UNLESS OTHERWISE SPECIFIED.
■ MEASURED IN "SPECIAL SERVICES" POSITION.
▲ TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED FROM PIN 7 OF V6.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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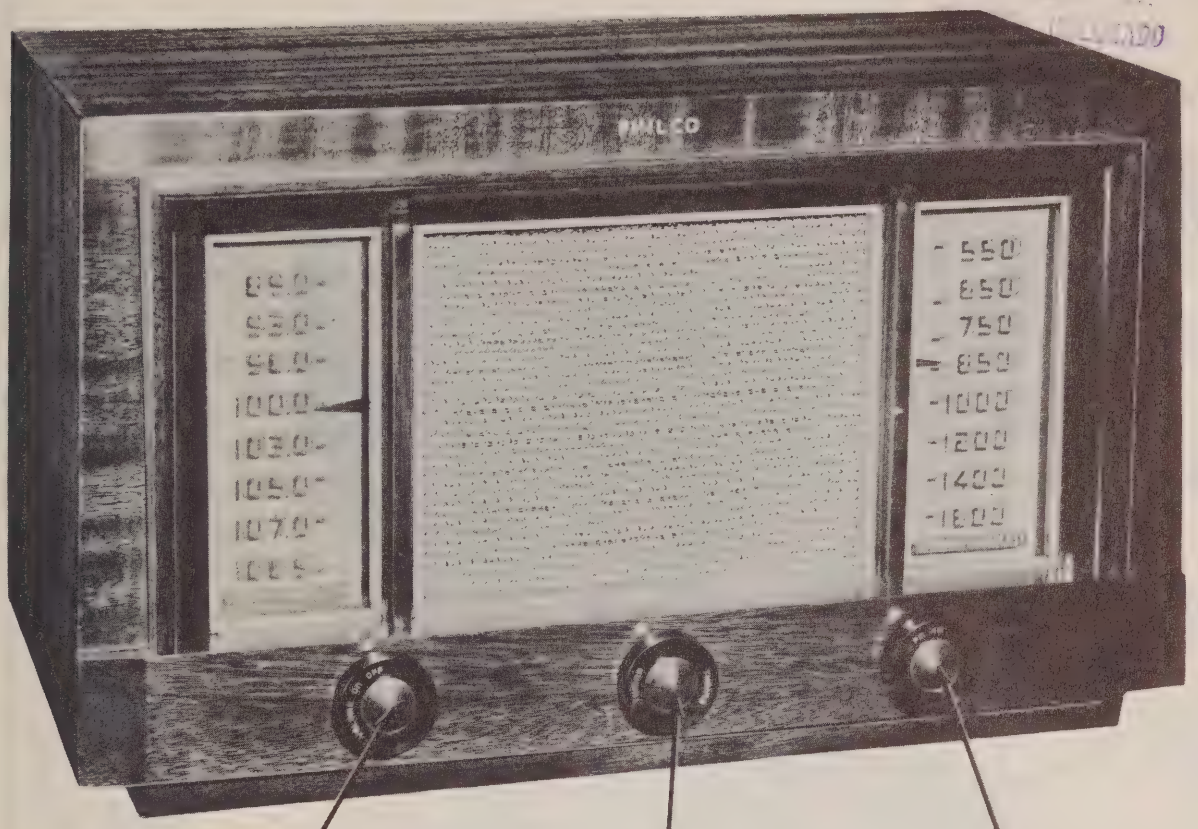
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHILCO
MODEL 53-958



PHILCO
MODEL 53-958

TRADE NAME	Philco Model 53-958
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver
TUBES (Six)	Types 12BA6 FM AM RF Amp., 12AT7 FM AM Conv., 12BA6 FM AM IF Amp., 12AU6 2nd. FM IF Amp., 19V8 Ratio Det-AM Det-AVC-AF Amp. 35C5 Auto Output.
POWER SUPPLY	105-125 Volts AC-DC RATING .32 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1620 DC FREQ. MOD. 88-108

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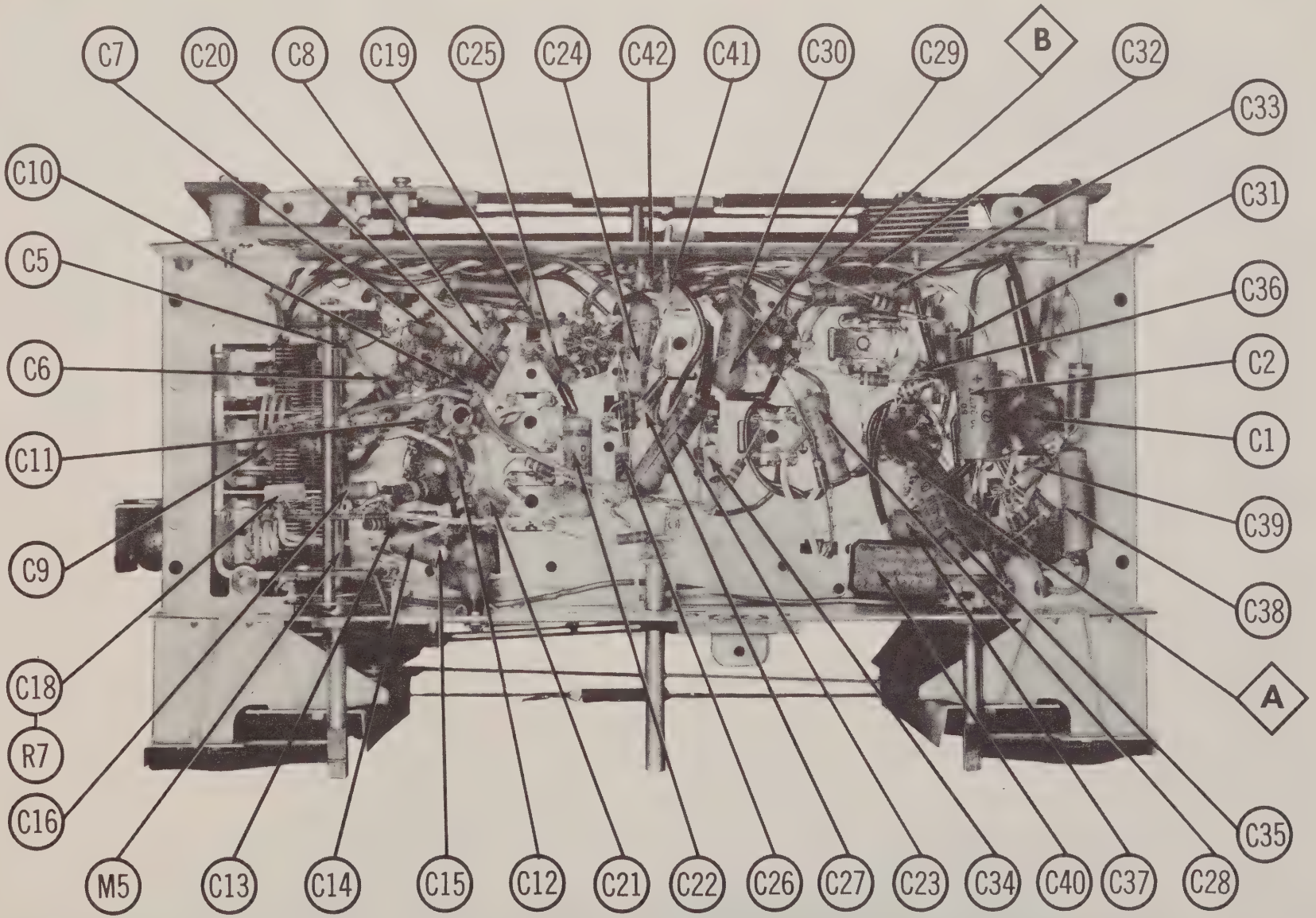
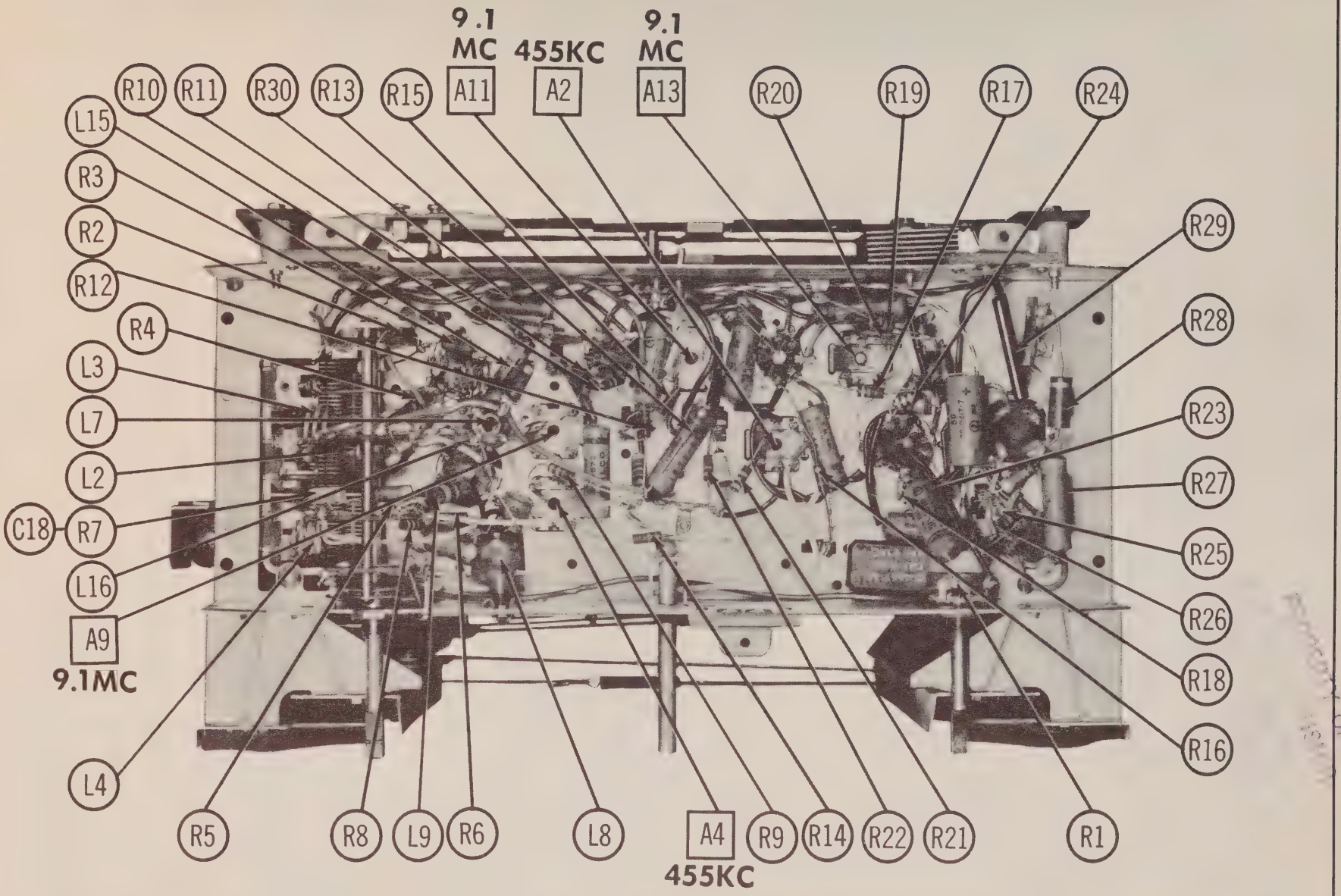
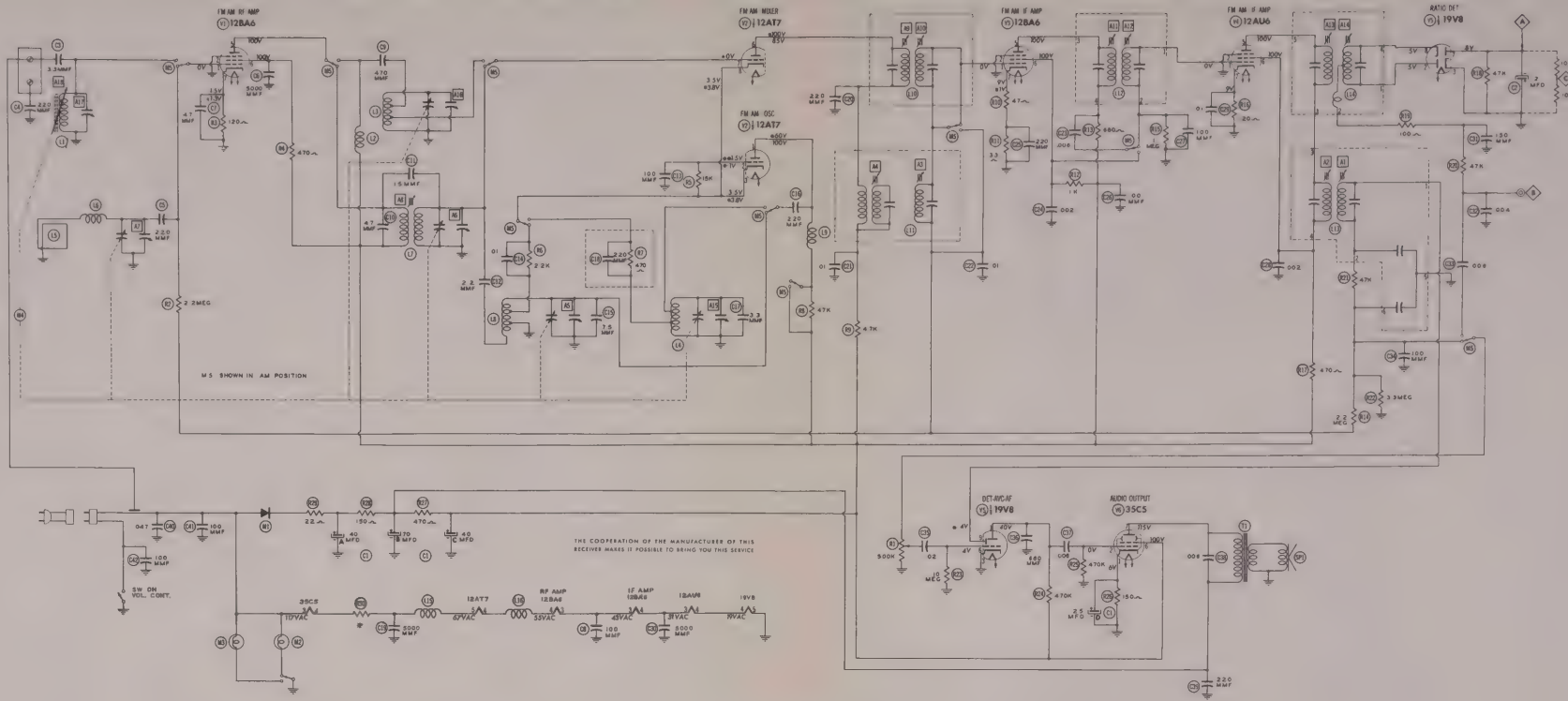


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION


FM AM RF AMP V1 12BA6
FM AM MIXER V2 12AT7
FM AM OSC V2 12AT7
FM AM IF AMP V5 12BA6
FM AM IF AMP V6 12AU6
RATIO DET V7 19V8
M S SHOWN IN AM POSITION
DET-AVC-AF V8 19V8
AUDIO OUTPUT V9 35C5
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
SW ON VOL. CONT.
35C5
12AT7
RF AMP 12BA6
IF AMP 12BA6
12AU6
19V8

IF = 455KC - AM
IF = 9.1MC - FM

* SPECIAL RESISTOR, SEE PARTS LIST FOR VALUE.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12BA6	0Ω ■5 Meg	0Ω	43Ω	53Ω	† 650Ω	† 1.1KΩ	120Ω		
V 2	12AT7	† 650Ω ■† 47KΩ	15KΩ ■17KΩ	470Ω ■2.2KΩ	53Ω	65Ω	† 5.4KΩ	0Ω ■8Ω	470Ω ■2.2KΩ	59Ω
V 3	12BA6	5.5Meg ■3 Meg	0Ω	43Ω	31Ω	† 1.3K	† 1.6KΩ	80Ω		
V 4	12AU6	1 Meg	0Ω	31Ω	19Ω	†1.1KΩ	†1.1KΩ	120Ω		
V 5	19V8	† 470KΩ	INF	0Ω	19Ω	0Ω	10 Meg	47KΩ	INF	■400KΩ
V 6	35C5	150Ω	470KΩ	170Ω	180Ω	INF	† 650Ω	† 820Ω		

ALL MEASUREMENTS TAKEN IN "FM POSITION UNLESS OTHERWISE SPECIFIED
■ MEASURED IN "AM" POSITION
† MEASURED FROM OUTPUT OF M1
▲ TAKEN IN VACUUM TUBE VOLTMETER
◆ MEASURED FROM PIN 3 OF V2
NOTE : FILAMENT RESISTANCE MEASUREMENTS INCLUDE PARALLEL RESISTANCE OF PILOT LAMP M3

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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200-7

RESISTANCE MEASUREMENTS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
Turn tuning gang fully closed and set each pointer to the upper index mark on the pointer rails.

AM ALIGNMENT

Set band switch to Broadcast position.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12AT7 (V2). Low side to chassis.	455KC (400∿Mod)	Brdcst.	1630KC mark on rail (bottom mark).	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output in order given.
2.		Loop	1630KC	"	"	"	A5	Adjust for maximum output.
3.		"	1520KC	"	1520KC mark on raill(second from bottom).	"	A6, A7	Adjust for maximum output in order given.
4.		"	580KC	"	580KC mark on rail (second from top).	"	A8	Adjust for maximum output while rocking tuning gang.
5.	Repeat steps 2 and 4 until no further improvement is noted.							

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (A) to chassis. The junction of these two resistors is alignment point (C) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to stator plates of rear FM section of tuning gang. Low side to chassis.	9.1MC	FM	88MC (Tuning gang fully closed).	DC probe to point (A) Common to chassis.	A9, A10, A11, A12, A13	Adjust for maximum deflection Attenuate generator output to maintain approximately 5 Volts at VTVM.
7.	"	"	"	"	"	DC probe to point (B) Common to point (C)	A14	Adjust for a zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
6.	.01MFD	High side to stator plates of rear FM section of tuning gang. Low side to chassis.	9.1MC (450KC Swp)	FM	88MC (Tuning gang fully closed.)	Vert. amp. to point (A) Low side to chassis.	A9, A10, A11, A12, A13	Dis connect stabilizer capacitor C2. Adjust for curve of max. amplitude and symmetry as in Fig. 1.
7.	"	"	"	"	"	Vert. amp. to point (B) Low side to chassis.	A14	Reconnect capaictor C2. Adjust so that 9.1MC occurs at center of crossover lines as in Fig. 2. SLIGHTLY retouch A13 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	270Ω Carbon Resistors	High side thru 270Ω to terminal 2 of FM antenna terminal board. Low side to terminal 1.	108.5MC (Unmod.)	FM	108.5MC (Bottom index mark on FM pointer rail)	DC probe to point (A). Common to chassis.	A15	Adjust for maximum deflection.
9.	"	"	92MC	"	Second index mark from top on FM pointer rail.	"	L4	Compress or expand FM oscillator coil, L4, for maximum deflection.
10.	"	"	105MC	"	Second index mark from bottom on FM pointer rail	"	A16, A17	Adjust in order given for maximum deflection.
11.	"	"	92MC	"	Second index mark from top on FM pointer rail	"	L3	Compress or expand FM mixer grid coil, L3, for maximum deflection. Repeat steps 10 and 11 until no improvement is noted.
12.	"	"	"	"	"	"	A18	Adjust for maximum deflection.

FIG. 1

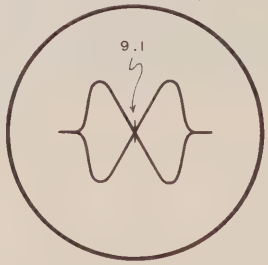


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	FM AM RF Amp.	12BA6	12BA6	7BK	
V2	FM AM Converter	12AT7	12AT7	9A	
V3	1st FM AM IF Amp.	12BA6	12BA6	7BK	
V4	2nd FM AM IF Amp.	12AU6	12AU6	7BK	
V5	Ratio Detector-Det (AM) -AVC-AF Amplifier	19V8	19V8	9AH	
V6	Audio Output	35C5	35C5	7CV	

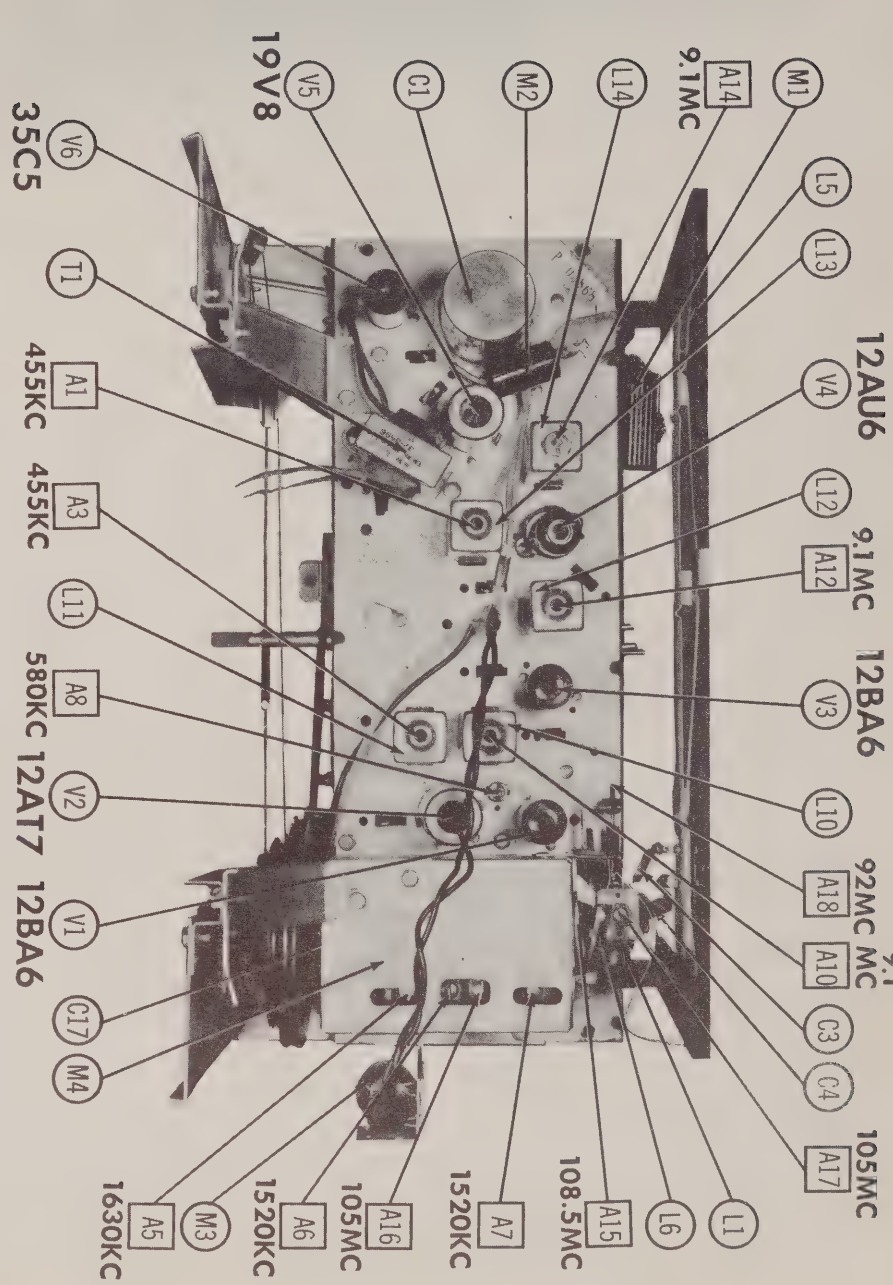
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲40	150	30-2570-46	AFHS4-124		DO32		FP411.3		
B	■70	150								
C	▲40	150								
D	25	25								
C2	2	50	30-2417-7	E26E6		BBR-2-50T		TC302	TVA-1301	
C3	3.3		30-1224-49	SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C4	220		62-122001001	SI220	D6-221		GP2K-221	UC-5322	5GA-T33	
C5	220		62-122001001	SI220	D6-221		GP2K-221	UC-5322	5GA-T33	
C6	5000		30-1238-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C7	47			SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	Note 1
C8	100		62-110001021	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C9	470			SI470	D6-471	TM5T5	GP2K-471	UC-5347	5GA-T47	Note 2
C10	47		60-00475420	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C11	1.5		30-1221-7	SI1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C12	2.2		30-1221-4		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C13	100		62-110001021	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C14	.01	400	30-4650-58	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C15	7.5		30-1224-65							
C16	220		30-1224-65	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C17	3.3	♦	30-1224-30	SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C18	220		♦30-6002	SI220	D6-221	5W5T25	GP2K-221	UC-5322	5GA-T22	
C19	5000		30-1238-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C20	220		62-122001001	SI220	D6-221	5W5T25	GP2K-221	UC-5322	5GA-T22	
C21	.01	400	30-4650-58	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C22	.01	400	30-4650-58	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C23	.006	400	30-4650-57	P688-006		PTE6D6	GP2-333-602	PT626	6TM-D6	
C24	.002	400	30-4650-54	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C25	220		62-122001001	SI220	D6-221	5W5T25	GP2K-221	UC-5322	5GA-T22	
C26	100		62-110009001	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C27	100		62-110001021	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C28	.002	400	30-4650-54	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C29	.01	400	30-4650-58	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C30	5000		30-1238-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C31	150		62-115001001	SI150	D6-151	TM5T15	GP2K-151	UC-5315	5GA-T15	
C32	.004	400	30-4650-56	P688-004	D6-402	PTE6D4	GP2-333-402	PT624	6TM-D4	
C33	.006	400	30-4650-57	P688-006		PTE6D6	GP2-333-602	PT626	6TM-D6	
C34	100		62-110001021	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C35	.02	400	30-4650-60	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C36	680		62-168001001	SI680	D6-681		GP2K-681	UC-5368	5GA-T68	
C37	.006	400	30-4650-57	P688-006		PTE6D6	GP2-333-602	PT626	6TM-D6	
C38	.006	400	30-4650-57	P688-006		PTE6D6	GP2-333-602	PT626	6TM-D6	
C39	220		62-122001001	SI220	D6-221	5W5T25	GP2K-221	UC-5322	5GA-T22	
C40	.047	400	30-4650-45	489ZX-05		PJ4S47		PT4147	4TM-S47	
C41	100		62-110001021	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C42	100		62-110001021	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	

Note 1. Some Models use 22MMF in this application (Part #62-022009001).
Note 2. Some Models use 220MMF in this application (Part #62-122001001).
♦ Items C18 and R7 are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	33-5566-44	Q13-133	AG-60-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PHILCO PART No.	IRC PART No.	
R2	2.2Meg	½	66-5228340	BTS-2.2Meg	
R3	120Ω	½	66-1128340	BTS-120	
R4	470Ω	½	66-1478340		
R5	15KΩ	½	66-3158340	BTS-15K	
R6	2200Ω	½	66-2228340	BTS-2200	
R7	470Ω	½	♦ 30-6002	BTS-470	
R8	47KΩ	½	66-3478340	BTS-47K	
R9	4700Ω	½	66-2478340	BTS-4700	
R10	47Ω	½	66-0478340		
R11	33Ω	½	66-0338340		
R12	1000Ω	½	66-2108340	BTS-1000	
R13	680Ω	½	66-1688340	BTS-680	
R14	2.2Meg	½	66-5228340	BTS-2.2Meg	
R15	1 Meg	½	66-5108340	BTS-1 Meg	
R16	120Ω	½	66-1128340	BTS-120	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	pPHILCO PART No.	IRC PART No.	
R17	470Ω	½	66-1478340	BTS-470	
R18	47KΩ	½	66-3478340	BTS-47K	
R19	100Ω	½	66-1108340	BTS-100	
R20	47KΩ	½	66-3478340	BTS-47K	
R21	47KΩ	½	66-3478340	BTS-47K	
R22	3.3Meg	½	66-5338340	BTS-3.3Meg	
R23	10 Meg	½	66-6109340	BTS-10Meg	
R24	470KΩ	½	66-4478340	BTS-470K	
R25	470KΩ	½	66-4478340	BTS-470K	
R26	150Ω	½	66-1158340	BTS-150	
R27	470Ω	1	66-1474340	BTA-470	
R28	150Ω	2	66-1155360		
R29	22Ω	2	66-0225360		
R30	*	*	33-1343-3		

* Special resistor 100ΩHot, 880Ω Cold.
♦ Items R7, C18 are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.2KΩ	3.1Ω	170Ω	.54Ω	32-8596	A-3332	A-3025	RO-2 ①	S-2X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6"	PM	3.1Ω	36-1641-14	ST-108 Mod. P6-X	6A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	PHILCO PART No.	MILLER PART No.	IRC PART No.	
L1	FM Ant. Coil	0Ω		32-4532A			
L2	FM RF Choke	3Ω		32-4422-10	4608	CLA	3.3 Microhenries
L3	FM RF Coil	0Ω		32-4415-2			Tapped
L4	FM Osc. Coil	0Ω		32-4414-6			Tapped
L5	AM Loop Ant.	3.4Ω		76-7836-1			
L6	RF Choke	.4Ω		32-4061-3			
L7	AM RF Coil	80Ω	8Ω	32-4572	70-RF		
L8	AM Osc. Coil	8.5Ω		32-4569-1			Tapped @ 2.7Ω & 3.6Ω
L9	RF Choke	3Ω		32-4422-10	4608	CLA	3.3 Microhenries
L10	1st. FM IF	1.4Ω	1.4Ω	32-4518A			
L11	1st. AM IF	12.5Ω	12.5Ω	32-4516A			Tertiary Winding 7Ω
L12	2nd. FM IF	2.1Ω	2.1Ω	32-4518-1A			
L13	2nd. AM IF	16Ω	18Ω	32-4517A	12-C6		
L14	Ratio Det.	3.2Ω	.4ΩCT	32-4310-4A			Tertiary Winding .7Ω
L15	Fil. Choke	1.8Ω		32-4422-8	4606	CLA	2.2 Microhenries
L16	Fil. Choke	1.8Ω		32-4422-8	4606	CLA	2.2 Microhenries

PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

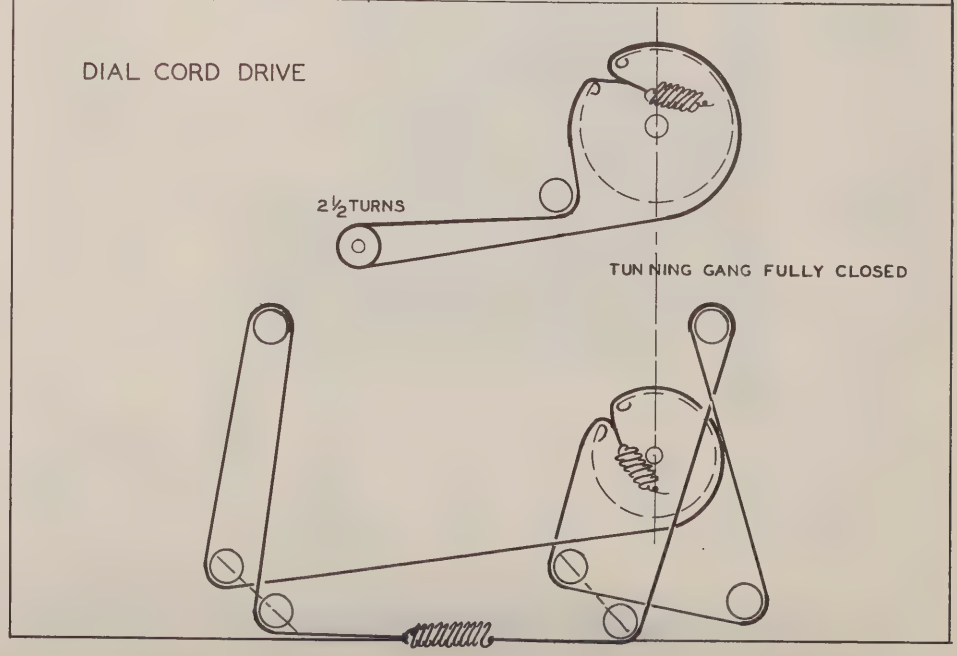
ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	PHILCO PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.064A	34-8003-1	NC5	5M1	1004A	6S100	100

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					PHILCO PART No.		
M2	Screw	117V	7W	Frosted	34-2605		
M3	Screw	117V	7W	Frosted	34-2605		

MISCELLANEOUS

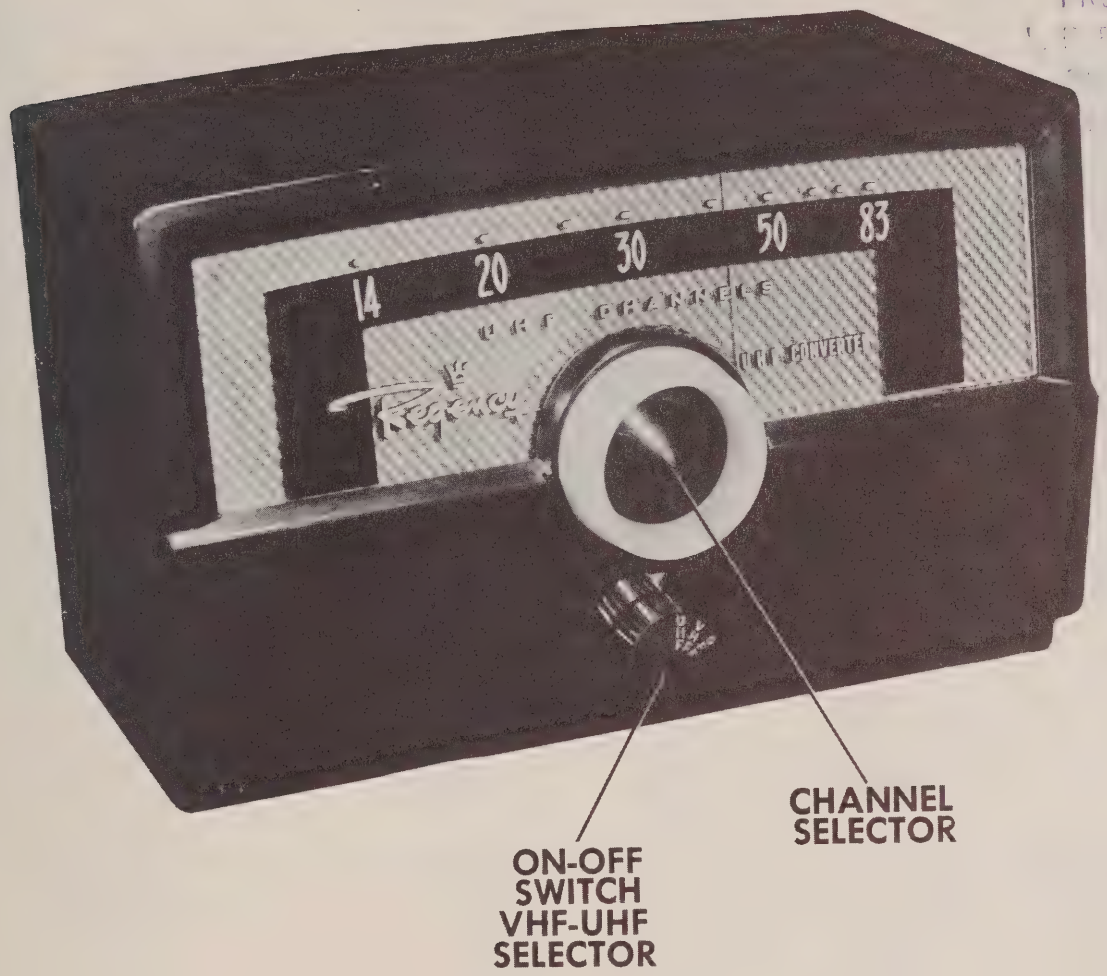
ITEM No.	PART NAME	PHILCO PART No.	NOTES
M4	Tuning Capacitor	31-2762-2	34-487MMF, 12-278MMF, 17-160MMF
M5	Switch	42-1991	AM-FM Selector
A17	Trimmer Capacitor	45-3034	FM Ant. Adj.
	Cabinet	10950	
	Back	76-7991	
	Back Plate	56-9932	Dial, R.H.
	Back Plate	56-9932-1	Dial, L.H.
	Scale	54-5159-1	Dial, L.H.
	Scale	54-5159	Dial, R.H.
	Pointer	56-5630-49	(2 used)
	Knob	54-4774-28	AM-FM Selector
	Knob	54-4774-26	Tuning
	Knob	54-4774-27	Off/On Volume



REGENCY
MODEL RC-600 (TV UHF Conv.)

PROPERTY OF
...NKENSHIP

REGENCY
MODEL RC-600 (TV UHF Conv.)



REGENCY
MODEL RC-600 (TV UHF Conv.)

TRADE NAME	Regency Model RC-600
MANUFACTURER	I.D.E.A, Inc., 7900 Pendleton Pike, Indianapolis, Ind.
TYPE SET	AC Operated UHF TV Converter
TUBES (Two)	Types 6AF4 RF Osc., 6BK7 IF Amp.
POWER SUPPLY	Channels 14 thru 83 RATING .20 Amp. @ 117 Volts AC
TUNING RANGE	

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		REGENCY PART No.	STANDARD REPLACEMENT		
V1	RF Oscillator	6AF4	6AF4	7DK	
V2	IF Amplifier	6BK7	6BK7	9AJ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	REGENCY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲50	150	300-082-7	AFH2-16		B016		FP214	TVL-2435	
B	■50	150								

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	REGENCY PART No.	IRC PART No.	
R1	390Ω	2		BTB-390	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PART No.	IRC PART No.	

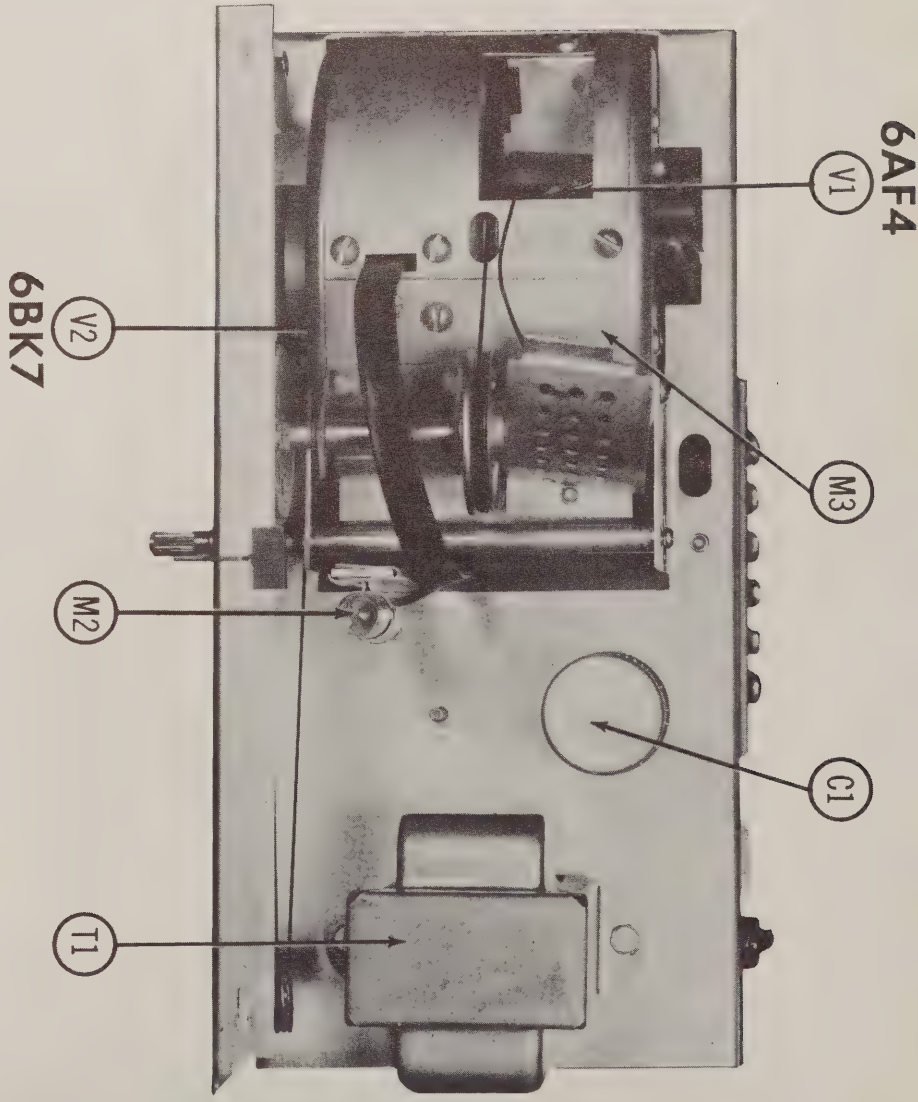
TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	REGENCY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @ .20A	150VAC .020ADC tap @ 6.8V @ .77A			300-272		P-3046		

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	REGENCY PART No.	MILLER PART No.	
L1	UHF Input Filter	0Ω				

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

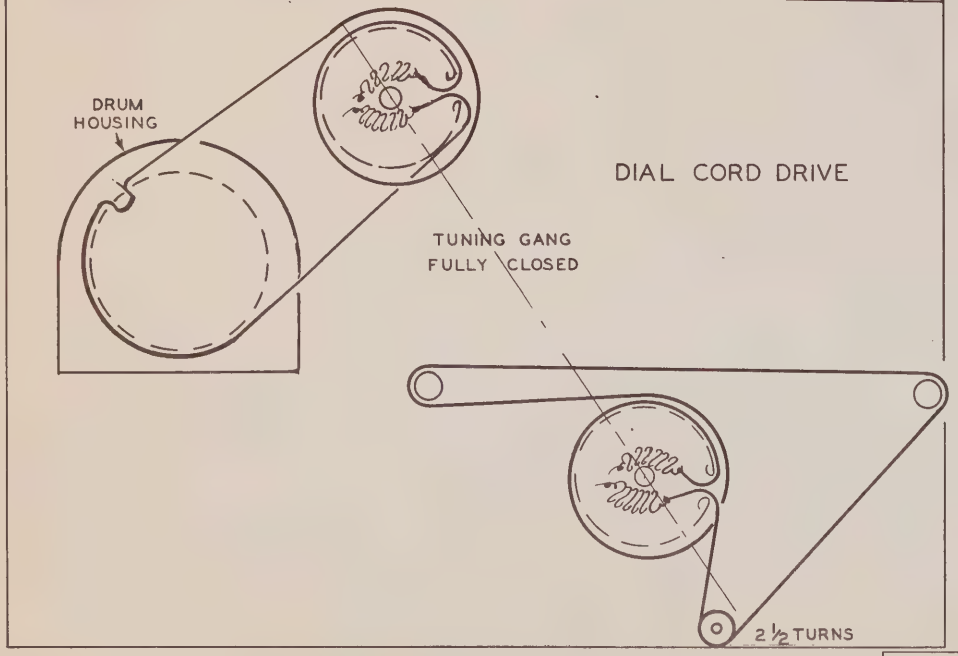
ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	REGENCY PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.039A		NA5	8J1	1002A	6S65	65

DIAL LIGHTS

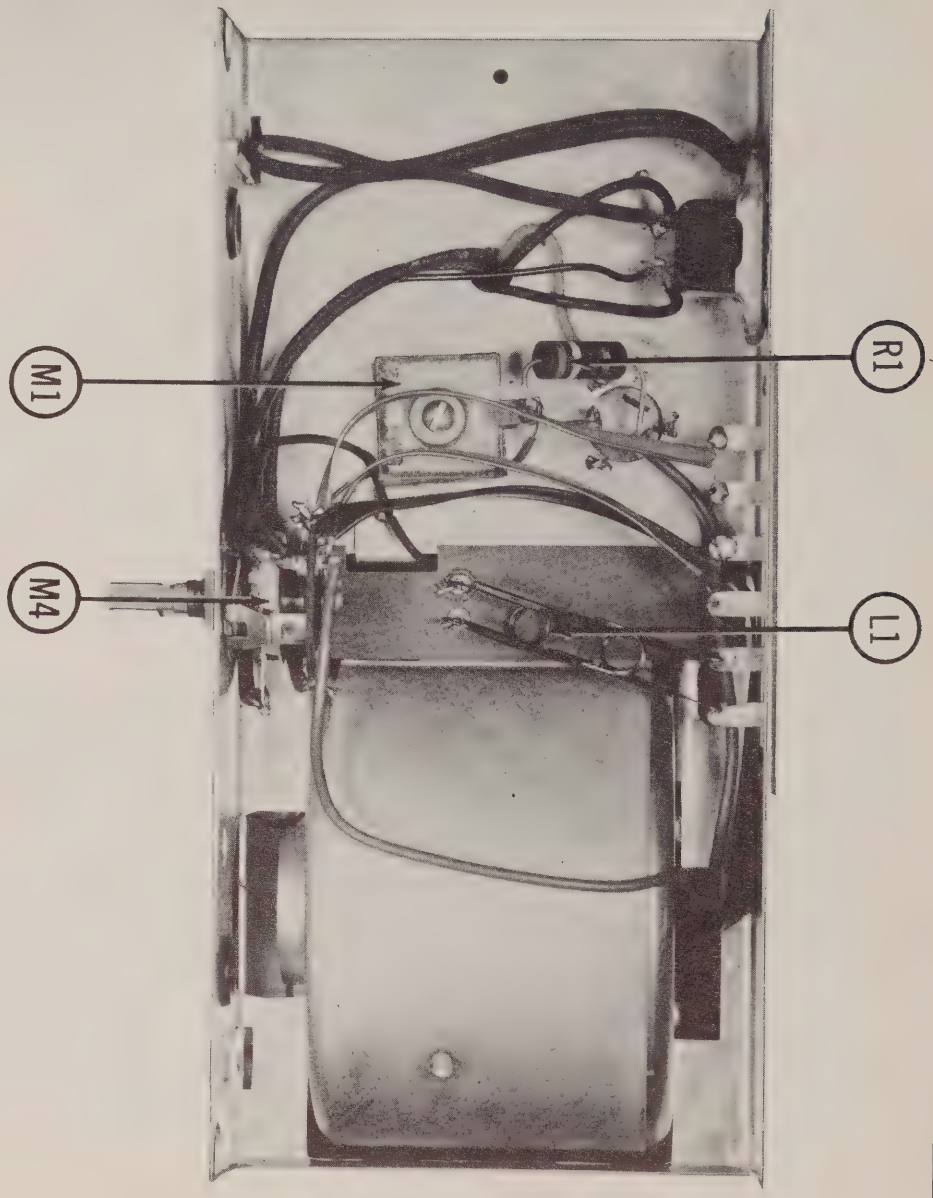
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					REGENCY PART No.		
M2	Bayonet	6-8	.25	Brown			Type No. 47.

MISCELLANEOUS

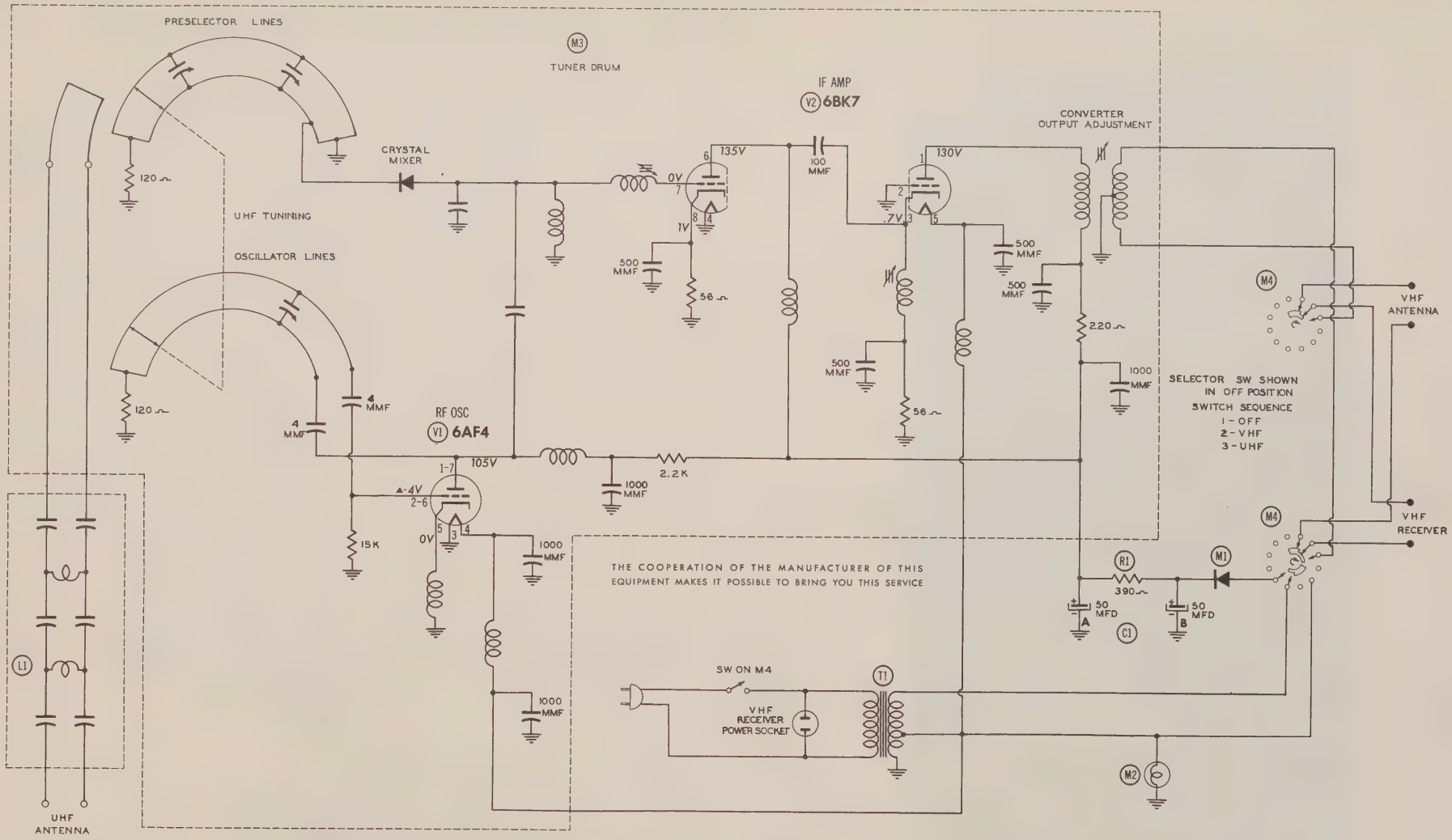
ITEM No.	PART NAME	REGENCY PART No.	NOTES
M3	Tuner Unit	300-296	Complete with tubes.
M4	Switch	300-286	VHF-UHF Selector
	Cabinet	600-016	Plastic
	Dial	300-289	Glass
	Pointer	100-450	Glass
	Knob	100-448-2	Selector
	Knob	100-375-2	Tuner
	Dial Light Shield	100-458	
	Terminal Board	300-079-6	Ant.



CHASSIS—BOTTOM VIEW



REGENCY MODEL RC-600



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AF4	†2.6KΩ	15KΩ	0Ω	.4Ω	0Ω	15KΩ	†2.6KΩ		
V 2	6BQ7	† 610Ω	0Ω	56Ω	0Ω	.5Ω	† 390Ω	1Ω	56Ω	0Ω

ALL MEASUREMENTS TAKEN IN UHF POSITION (NO SIGNAL APPLIED)
† MEASURED FROM OUTPUT OF M1.
▲ TAKEN WITH VACUUM TUBE VOLTMETER.

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200-8

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

*TRADE MARK

STEWART-WARNER MODELS 21C-9211D, E, F, G (Series A, B, C), 21T-9211B (Series A, B) 21T-9211C (Series A, B, C)

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MODEL 21T-9211B

STEWART-WARNER MODELS 21C-9211D, E, F, G (Series A, B, C), 21T-9211B (Series A, B) 21T-9211C (Series A, B, C)

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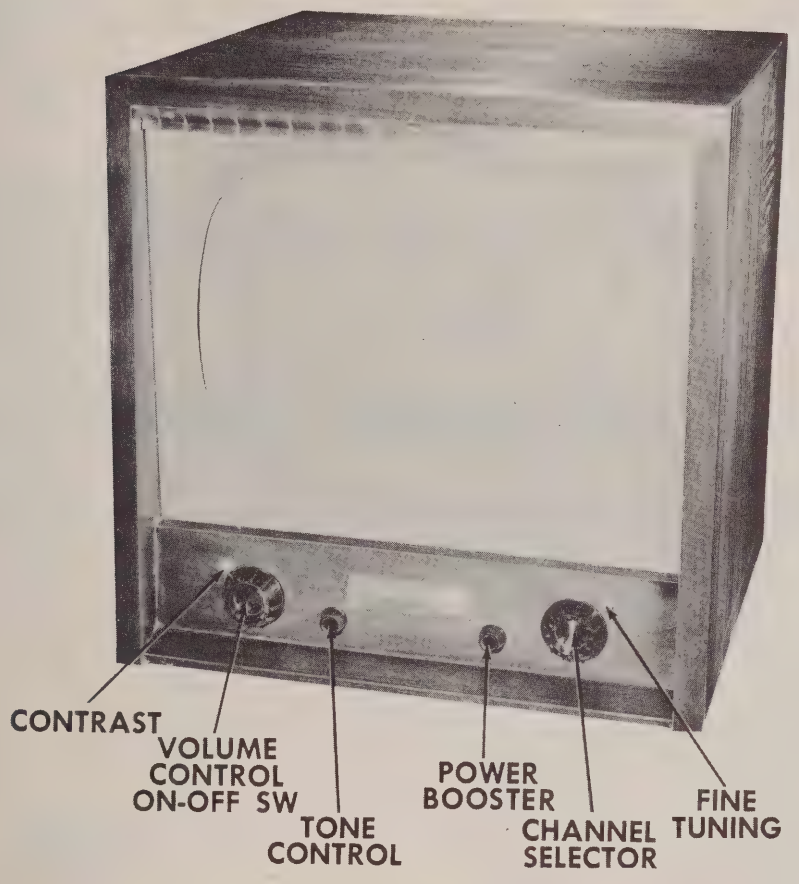

STEWART WARNER MODEL 21T-9211B

TRADE NAME	Stewart Warner Models 21C-9211D, E, F, G, (Series A, B, C) 21T-9211B (Series A, B) 21T-9211C (Series A, B, C)
MANUFACTURER	Stewart Warner Elect., Div. of Stewart Warner Corp., 1300 N. Kostner Ave., Chicago, Ill.
TYPE SET	Television Receiver
TUBES	Nineteen

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1.94 Amp. @ 117 Volts AC
TUNING RANGE—Channels 2 thru 13, Video IF 26.75MC, Sound IF 22.25MC (Intercarrier).

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STEWART-WARNER MODELS 21C-9211D, E, F, G (Series A, B, C), 21T-9211B (Series A, B) 21T-9211C (Series A, B, C)

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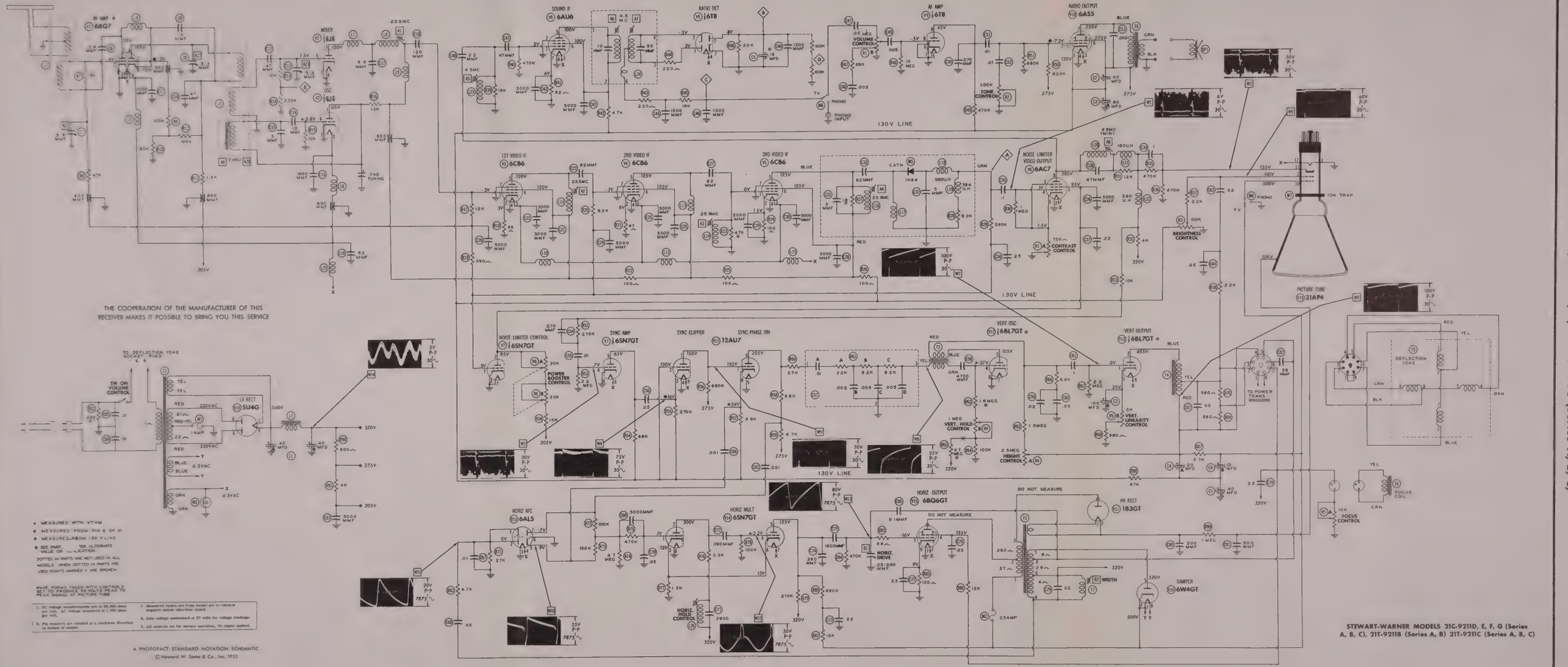
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
RF AMP
MIXER
OSC
SOUND IF
RATIO DET
AF AMP
AUDIO OUTPUT
1ST VIDEO IF
2ND VIDEO IF
3RD VIDEO IF
NOISE LIMITER VIDEO OUTPUT
NOISE LIMITER CONTROL
SYNC AMP
SYNC CLIPPER
SYNC PHASE INV
VERT OSC
VERT OUTPUT
HORIZ AFC
HORIZ MULT
HORIZ OUTPUT
HV RECT
DAMPER
LV RECT
PICTURE TUBE
130V LINE
VOLUME CONTROL
TONE CONTROL
CONTRAST CONTROL
BRIGHTNESS CONTROL
VERT. HOLD CONTROL
VERT. LINEARITY CONTROL
HEIGHT CONTROL
HORIZ. DRIVE
HORIZ. HOLD CONTROL
WIDTH
FOCUS CONTROL
ION TRAP
DEFLECTION YOKE
TO POWER TRANS
SW ON VOLUME CONTROL
TO DEFLECTION YOKE SOCKET PINS
DO NOT MEASURE
PHONO
PHONO INPUT
TV
FINE TUNING
POWER BOOSTER CONTROL
A MEASURED WITH VTVM
B MEASURED FROM PIN 8 OF V1
C MEASURED FROM 130 V LINE
D SEE PART. VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 20,000 ohms per volt, AC voltage measured at 1,000 ohms per volt.
2. Resistors are mounted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to chassis or negative unless otherwise stated
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, No signal applied.
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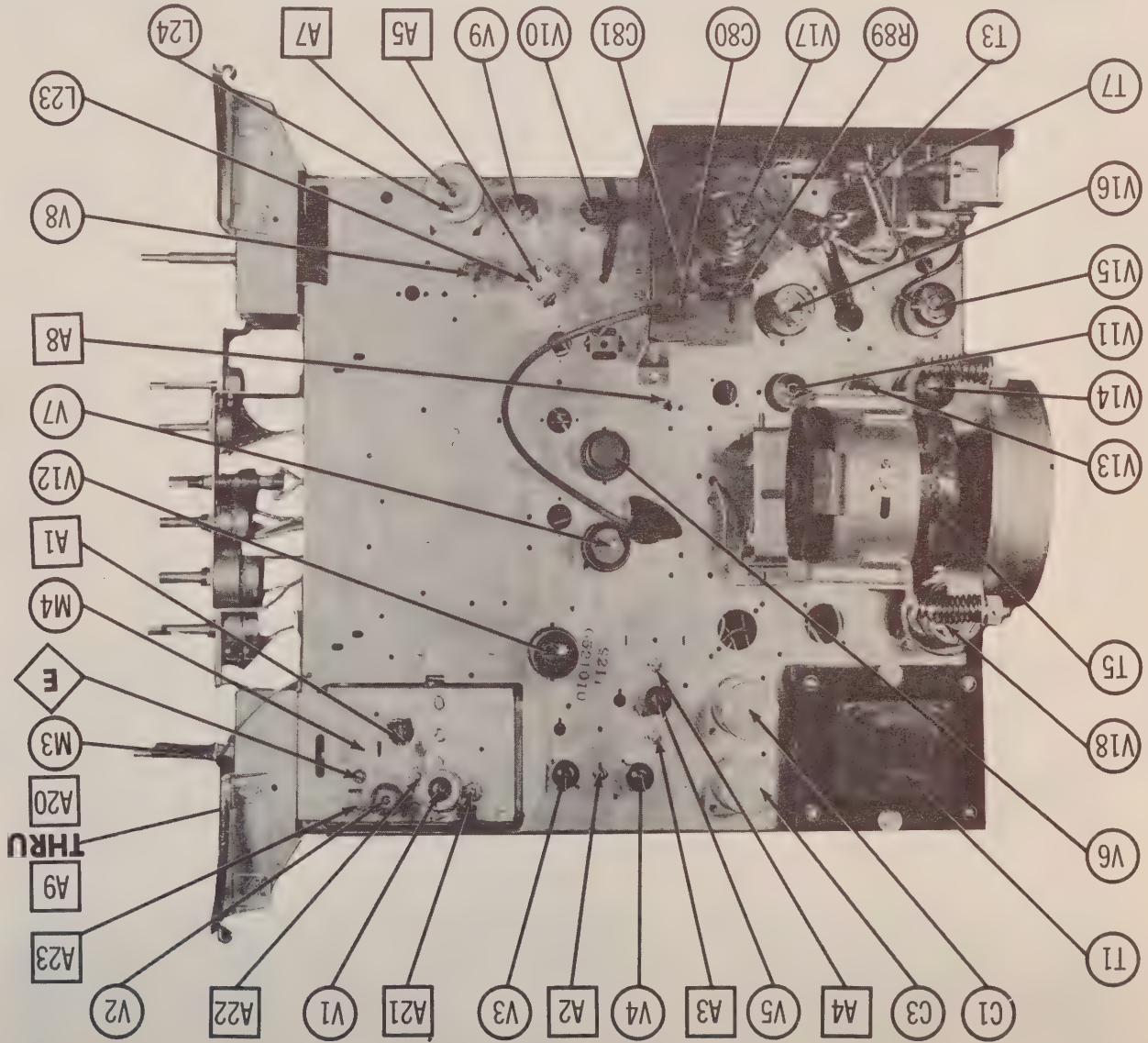
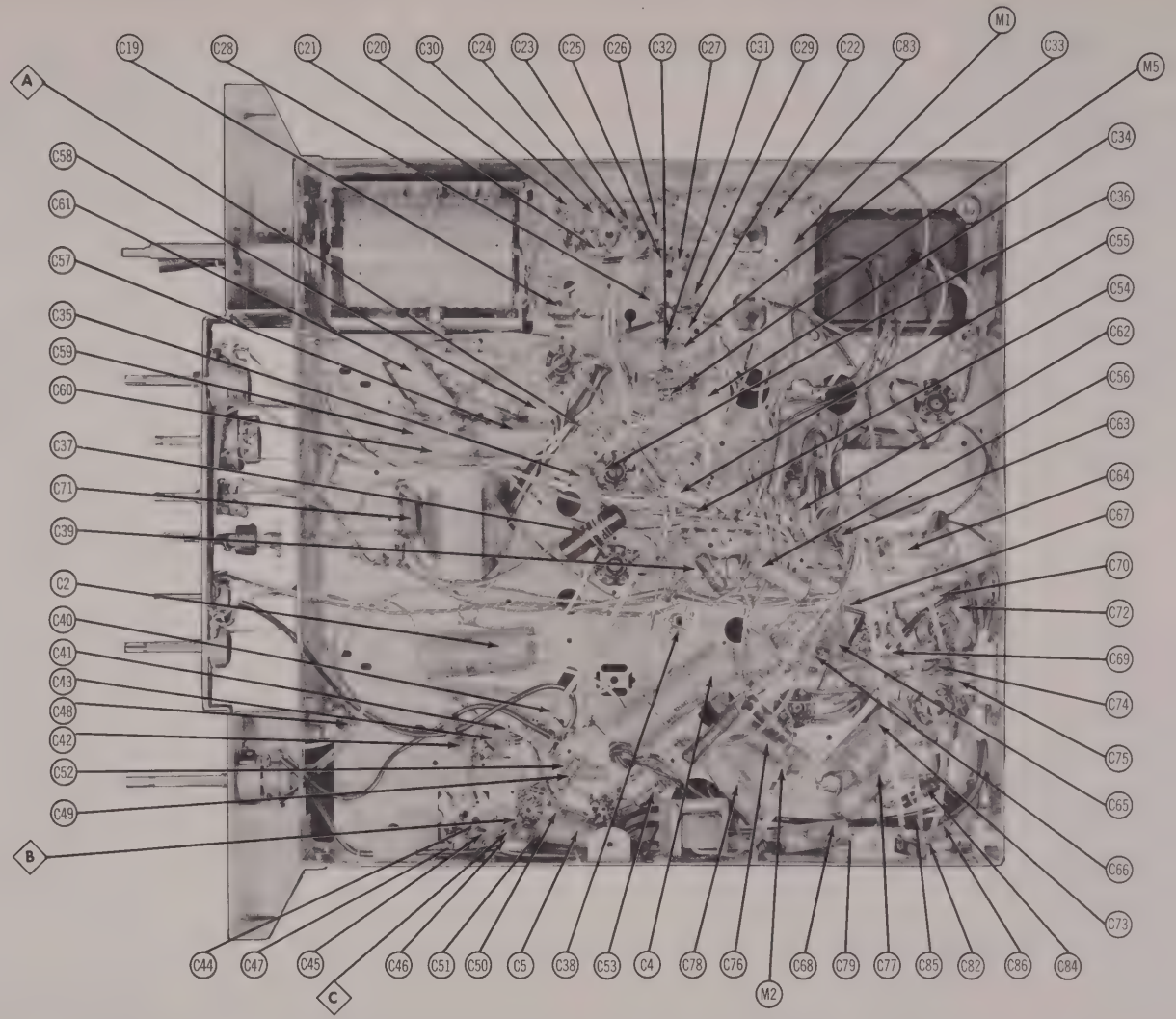
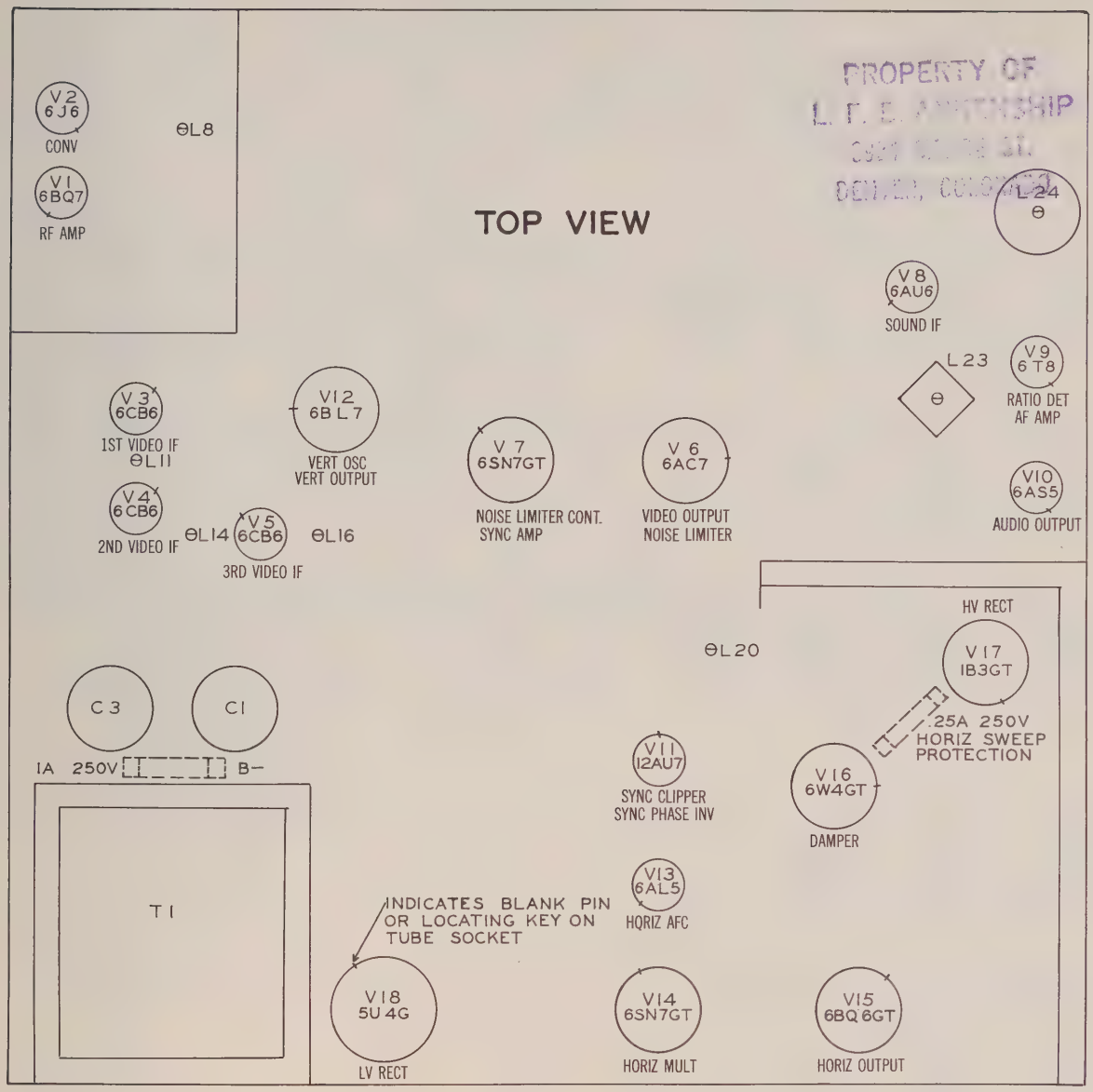
CHASSIS TOP VIEW





CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



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TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V18 Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6, V10
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V6, V19
Has pic, no sound-V8, V9, V10

SYNC FAILURE
No vert. sync.-V11, V12
No horiz. sync.-V11, V13, V14
No vert. or horiz. sync.-V7, V11

SWEEP FAILURE
No raster, has sound-V14, V15, V16, V17, V19 Fuse (M2)
No vertical deflection -V12
Poor vert. linearity or foldover-V12
Poor horiz. linearity or foldover-V14, V15, V16
Narrow picture-V14, V15, V16, V17, V18
Vert. off freq-V11, V12
Horiz. off freq-V11, V13, V14

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal multivibrator tube (V14) from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative terminal of a 3 volt battery to the ungrounded side of C34. Connect the positive side to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	23.5MC (Unmod)	Any	DC probe to point (A). Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	"	"	25.9MC	"	" "	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	25MC (10MC Swp).	22.25MC 26.75MC	Any	Vert. amp. thru 47KΩ to point (A). Low side to chassis.		Check for response curve similar to Fig. 1. If necessary retouch A1 thru A4 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect the two matched 100KΩ (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B). Common to chassis.	A5, A6	Adjust for maximum deflection.
5.	"	"	"	"	DC probe to point (C). Common to point (D).	A7	Adjust for zero reading . A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point (B). Low side to chassis.	A5, A6	Disconnect stabilizer capacitor C5. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
5.	"	"	"	"	"	Vert. amp. to point (C). Low side to chassis.	A7	Reconnect stabilizer C5. Adjust so that 4.5MC occurs at center of crossover lines. as in Fig. 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Set contrast control for maximum contrast.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (Fig. 4) to pin 11 of picture tube. Common to chassis.	A8	Adjust for MINIMUM deflection.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The channel oscillator adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp thru 47KΩ to point (A). Low side to chassis.	A9	Adjust to place shound marker as shown in Fig. 5. Video marker should be approximately 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A10	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A11	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A12	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A13	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A14	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A15	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A16	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A17	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A18	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A19	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A20	

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120 Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to point (E) Low side to chassis.	A21, A22, A23	Adjust for response curve similar to Fig. 6.
9.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response curve similar to Fig. 6. If markers fall below 70% on any channel make slight compromise adjustments of A21, A22 and A23 with channel switch set to that channel then recheck to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.25MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.75MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

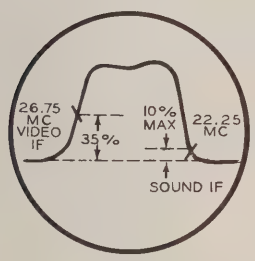


FIG. 1

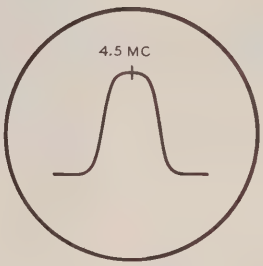


FIG. 2

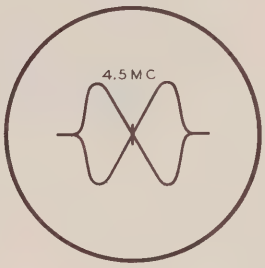


FIG. 3

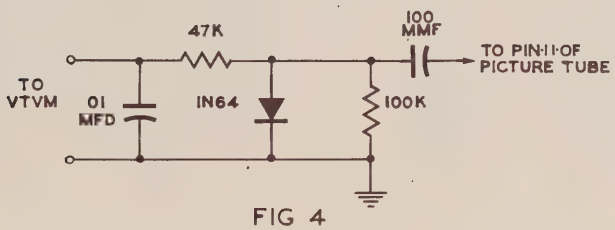


FIG 4

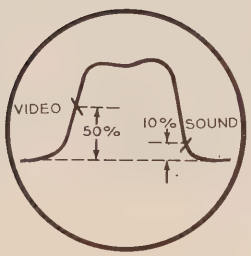


FIG. 5

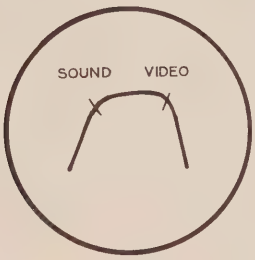
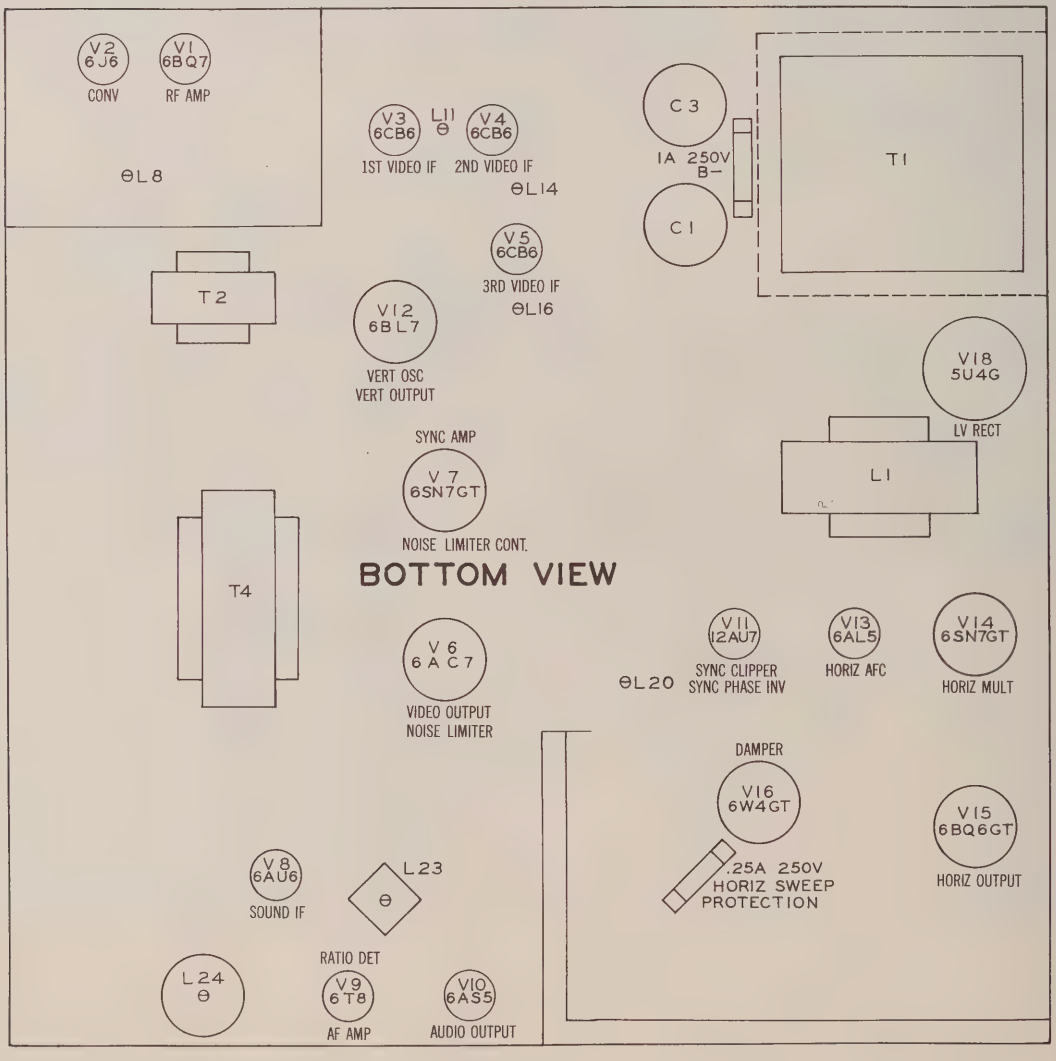


FIG 6

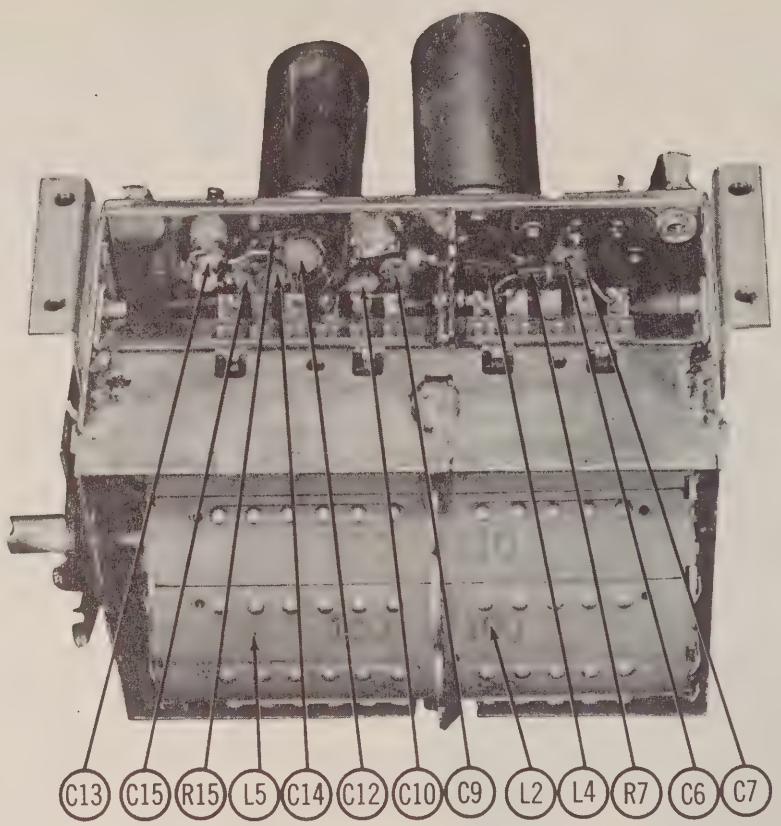
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	615KΩ	0Ω	.1Ω	0Ω	† 6.2KΩ	† 160KΩ	INF	0Ω
V 2	6J6	#15KΩ	#300Ω	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	590KΩ	68Ω	.1Ω	0Ω	#300Ω	#300Ω	0Ω		
V 4	6CB6	575KΩ	47Ω	.1Ω	0Ω	#200Ω	#200Ω	0Ω		
V 5	6CB6	.2Ω	100Ω	.1Ω	0Ω	#100Ω	#100Ω	0Ω		
V 6	6AC7	0Ω	0Ω	110Ω	1Meg	110Ω	† 20KΩ	.1Ω	† 4KΩ	
V 7	6SN7GT	570KΩ	† 20KΩ	0Ω	2.2Meg	#68KΩ	0Ω	0Ω	.1Ω	
V 8	6AU6	470KΩ	0Ω	.1Ω	0Ω	#4.7KΩ	#4.7KΩ	82Ω		
V 9	6T8	INF	22KΩ	INF	.1Ω	0Ω	0Ω	0Ω	10Meg	#470KΩ
V 10	6AS5	60KΩ	† 380KΩ	.1Ω	0Ω	† 380KΩ	670Ω	† 1.1KΩ		
V 11	12AU7	† 680KΩ	#0Ω	#270KΩ	0Ω	0Ω	† 12KΩ	† 680KΩ	#3.9KΩ	.1Ω
V 12	6BL7GT	2.2Meg	■3.5KΩ	1.4KΩ	2.5Meg	■2.6Meg	0Ω	0Ω	.1Ω	
V 13	6AL5	27KΩ	27KΩ	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 14	6SN7GT	5Meg	† 3.5KΩ	1.5KΩ	100KΩ	† 270KΩ	1.5KΩ	.1Ω	0Ω	
V 15	6BQ6GT	INF	.1Ω	INF	† 12KΩ	470KΩ	470KΩ	0Ω	100Ω	TOP CAP ■37Ω
V 16	6W4GT	■0Ω	INF	900KΩ	INF	† 75Ω	■0Ω	■0Ω	■.1Ω	
V 17	1B3GT	PINS 1 TO 8 HAVE INF RESISTANCE								TOP CAP ■327Ω
V 18	5U4G	INF	16KΩ	INF	21Ω	.1Ω	22Ω	INF	16KΩ	
V 19	21AP4	0Ω	35KΩ	PIN 10 ■0Ω	PIN 11 † 240KΩ	PIN 12 .1Ω				

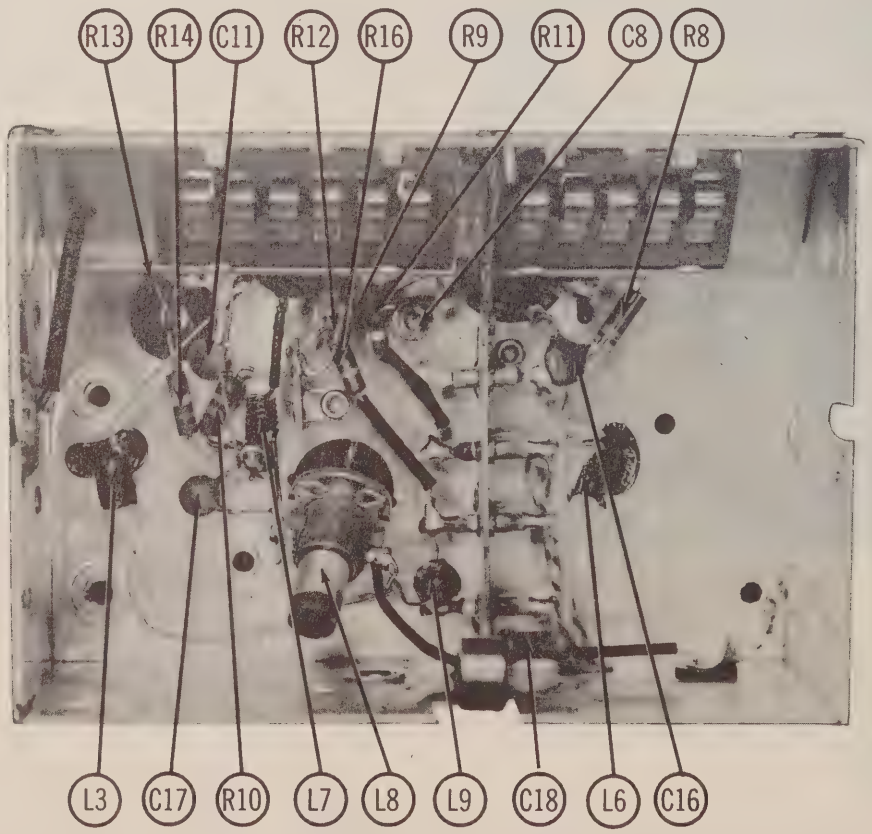
† MEASURED FROM PIN 8 OF V18.
# MEASURED FROM 130 VOLT LINE.
■ MEASURED FROM PIN 3 OF V16.



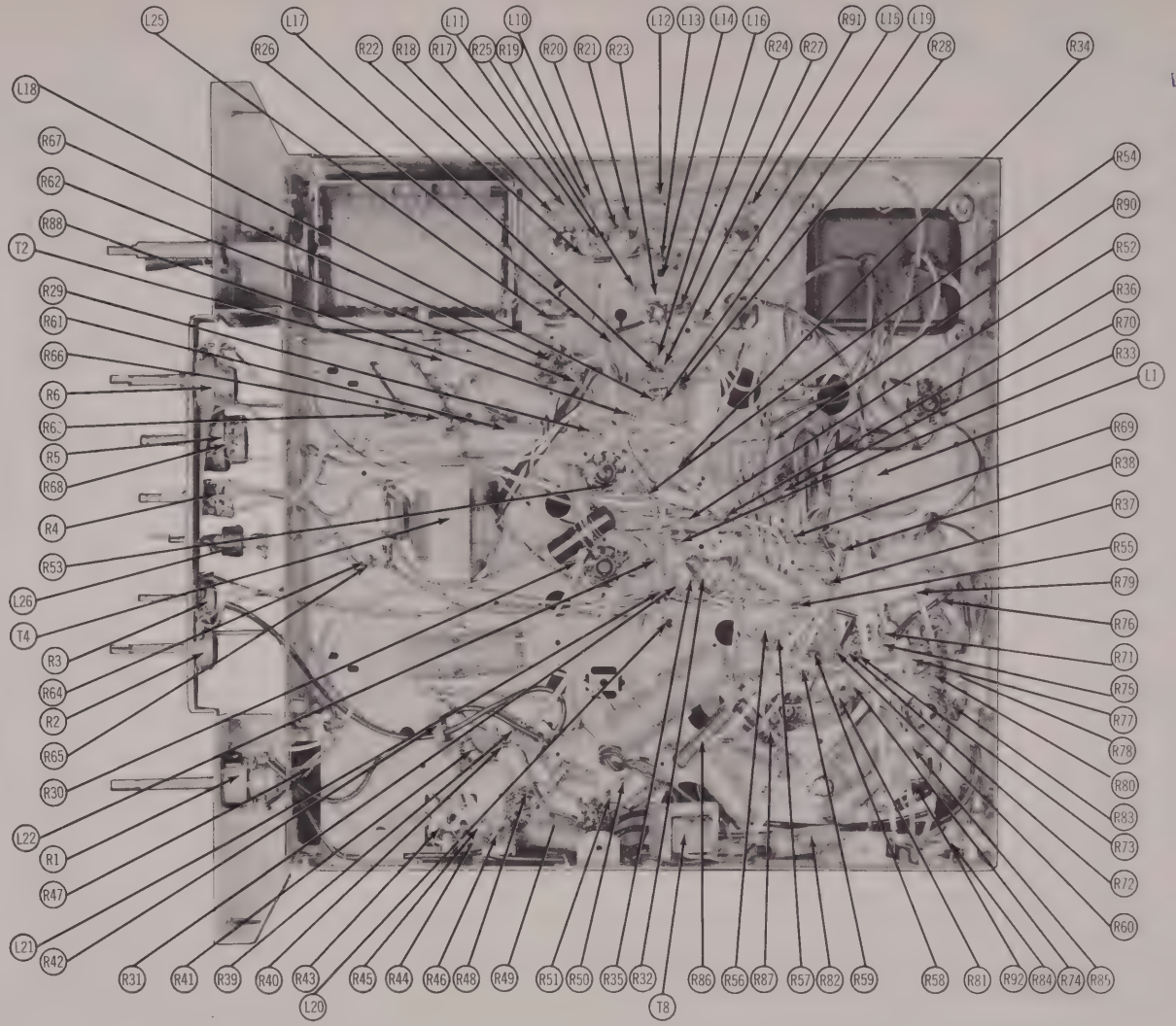
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Check waveform W13.

If Unsatisfactory	If Satisfactory
Substitute V14 and check associated components.	Substitute V15 and V16. Check yoke and associated components.

INSUFFICIENT SWEEP

Check setting of drive control.

Check waveform W13.

If Unsatifactory	If Satisfactory
Substitute V14 and check associated components.	Substitute V15 and V16. Check associated components. Check C86 for open by disconnecting one end. Sweep should decrease slightly if capacitor is O.K. Check C76 and C79 for open.

DRIVE LINES

Check setting of drive control (B1). Substitute V15 and V16. Check C4B and C79 for open.

COMPRESSED LEFT SIDE

Substitute V15 and V16. Check T3 and associated components.

FOLDS

Substitute V16. Check associated components.

XMAS TREE EFFECT

Substitute V14. Check C71 and C72. Check associated components.

VERTICAL

LOSS OF SWEEP

Check waveform at W7.

If Unsatisfactory	If Satisfactory
Substitute V12. Check associated components.	Check vertical output transformer

INSUFFICIENT SWEEP

Check amplitude of waveform at W7.

If Unsatisfactory	If Satisfactory
Substitute V12 and check components. Check C4A for open.	Check T4. Substitute V12.

COMPRESSED AT BOTTOM

Check C61 for leaky condition. Check C3B in vertical output tube cathode for open.

COMPRESSED AT TOP, STRETCHED AT BOTTOM

If adjustment of height and vertical linearity control does not correct this condition, check C59 and C60 for open.

FOLDS

Substitute V12 and check C3B.

SYNC

HORIZONTAL

LOSS OF SYNC

Check waveform at W10.

If Incorrect	If Correct
Substitute V7 and V11. Check circuit components.	Check waveform at W11.

Check waveform W11.

If Incorrect	If Correct
Check feedback network (C67, C68, R71 and R82.	Substitute V13 and V14. Check associated components. Particularly C71 and L26.

CRITICAL HOLD

Substitute V13 and V14. If no change is noted, follow procedure outlined under horizontal, loss of sync.

PULLING PICTURE

Check V13 and associated components.

VERTICAL

LOSS OF SYNC

Check waveform W6.

If Incorrect	If Correct
Substitute V11. Check associated components and integrator.	Substitute V12 and check associated components.

CRITICAL SYNC

Substitute V7 and V11. Check C55 and C56.

TRIGGERING

Substitute V12.

VIDEO

SOUND BARS

Check adjustment of A5 (4.5MC trap). Check setting of local oscillator and alignment of IF stages.

POOR RESOLUTION

Check alignment of Tuner and IF stages. Substitute V6 and check associated components.

SMEAR

Substitute V6 and check circuit components.

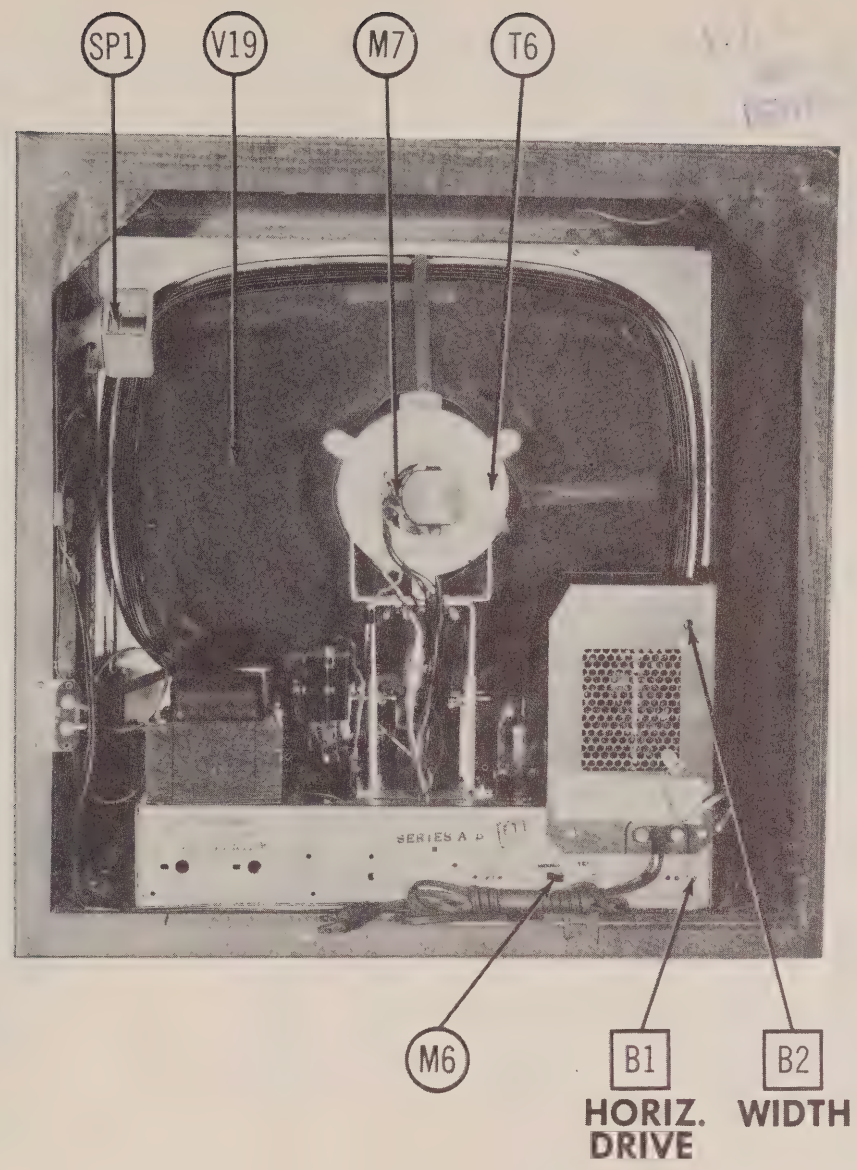
ONE WIDE BLACK BAR ACROSS THE PICTURE

Check tuner, IF and video amplifier tubes for leakage between filament and cathode.

POOR CONTRAST

Check waveform W2.

If Distorted or Weak	If Satisfactory
Substitute V6 and check circuit components.	Check picture tube.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV staion, preferably a test pattern.

Adjust the horizontal hold until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B1) counter clockwise as far as possible without the presence of vertical white lines or crowding of the picture.

As the setting of B1 affects the width and linearity of the picture it may be necessary to readjust B1 slightly while adjusting the width slug (B2) for the proper width and linearity.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Stewart-Warner PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1A	RF Amplifier		6BQ7	9AJ	
B	RF Amplifier		6B27	9AJ	
V2	Converter		6J6	7BF	
V3	1st Video IF Amp.		6CB6	7CM	
V4	2nd Video IF Amp.		6CB6	7CM	
V5	3rd Video IF Amp.		6CB6	7CM	
V6	Video Output - Noise Limiter		6AC7	8N	
V7	Noise Limiter Control - Sync Amp.		6SN7GT	8BD	
V8	Sound IF Amp.		6AU6	7BK	
V9	Ratio Detector - AF Amplifier		6T8	9E	
V10	Audio Output		6A35	7CV	
V11	Sync Clipper - Sync Phase Inv.		12AU7	9A	
V12	Vertical Oscillator - Vertical Output		6BL7GT	8BD	Series "C" Uses 6C4 Vert. Osc. & 6S4 Vert. Output
V13	Horizontal AFC		6AL5	6BT	
V14	Horiz. Mult.		6SN7GT	8BD	
V15	Horiz. Output		6BQ6GT	6AM	
V16	Damper		6W4GT	6CG	
V17	HV Rectifier		1B3GT	3C	
V18	LV Rectifier		5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Stewart - Warner PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V19		2LAP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: Stewart-Warner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	520434	AFH3-44		C035		FP377	TVL-3787	
B	▲40	450								
C	▲0	250								
C2	40	300	160095	PRS450/40		BR4035		TC78	TVA-1611	
C3A	30	350	509002	AFH3-142		B060		FP375	TVL-3764	
B	▲100	50								
C4A	20	450	520641	AFH2-50		B039		TCD75	TVL-3716	Orange Plain.
B	10	450								Note 1.
C5	18	150	505174	PRS150/12		BR1615		TC44	TVA-1409	
C6	3.6		520721							
C7	3-9		509064		829-10					
C8	.5-3		507988		829-3				CT565A	
C9	1.5		520720	SIL.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C10	47		520719	BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C11	1000		520735	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C12	47		520719	BPD-000047	D5-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C13	.5-3		507988		829-3				CT565A	
C14	10		520718	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C15	5		520717	SI5N750	TCN-5		N750K-050	NT-555	5TCU-V5	
C16	1000		520735	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C17	6.8		520716	SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C18	120		513029	SI120	D6-121	TM5T12	GP1K-121	UC-5312	5GA-Q12	
C19	82		513016	SI82	D6-820		GP1K-820		5GA-Q82	
C20	5000		513013	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C21	5000		513013	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C22	5000		513013	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C23	82		513016	SI82	D6-820		GP1K-820		5GA-Q82	
C24	5000		513013	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C25	5000		513013	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C26	5000		513013	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C27	82		513016	SI82	D6-820		GP1K-820		5GA-Q82	
C28	5000		513013	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C29	5000		513013	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C30	5000		513013	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C31	5		513432	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C32	82		513016	SI82	D6-820		GP1K-820		5GA-Q82	
C33	5		513432	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C34	.25	200	512045	P488-25		PJ2P25		PT4025	2TM-P25	
C35	.1	200	512033	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C36	5000		513013	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C37	.25	200	512233	P488-25		PTE4P25		PT4025	4TM-P25	
C38	47		513438	SI47NP0	TCZ-47		NP0K-470	ZT-5447	5TCC-Q47	
C39	.1	400	512035	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C40	2.2		531001		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C41	47		513002	SI47	D6-470		GP1K-470	UC-5447	5GA-Q22	
C42	5000		513013	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C43	5000		513013	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C44	1500		513010	SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C45	1500		513010	SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C46	1500		513010	SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C47	.05	600	512027	P688-05	DF-503	PTE5E5		PT615	6TM-S5	
C48	.005	600	512007	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C49	.005	600	512007	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C50	270		513006	SI270	D6-271		GP2K-271	UC-5327	5GA-T27	
C51	.01	400	512011	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C52	.01	200	513009	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C53	.005	600	512007	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C54	270		513006	SI270	D6-271		GP2K-271	UC-5327	5GA-T27	
C55	.01	600	512013	P688-01	D6-103	PTE6S1	GP2-333-103	PT911	6TM-S1	
C56	.05	400	512029	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C57A	.01			P688-01	DD-103	PTE6S1	S21-01	PT611	5HK-S1	
B	.002		▲508062	P688-002	*DC-100	PTE6D2	†1405-01	PT622	▲10C1	
C	.005			P688-005		PTE6D5		PT625		
D	.005			P688-005		PTE6D5		PT625		

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Stewart-Warner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C58	.4700	1000	512533							
C59	.02	600	512019	P688-02	DF-303	PTE6S3		PT613	6TM-S3	
C60	.05	600	512306							
C61	.1	600	512037	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C62	.05	200	512027	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C63	.02	600	512019	P688-02	DF-303	PTE6S3		PT613	6TM-S3	
C64	.05	600	512031	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C65	.001	600	512001	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C66	.001	600	512001	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C67	.01	200	512009	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C68	.05	600	512031	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C69	5000		513013	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C70	.05	200	512027	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C71	3900	500	512540	1464-004		1DR5D4		MCB463	MS-34	
C72	390	500	512535	1469-0004		5R5T4		MCB243	MS-34	
C73	.25	600	512049	684-25		PTE6P25		PT6025	6TM-P25	
C74	390	500	512535	1469-0004		5R5T4		MCB243	MS-34	
C75	1000	500	512515	1468-001	D6-102	5W5D1	GP2L-102	MC255	1FM-Z1	
C76	.05	600	512031	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C77	.25	200	512045	P488-25		PJ2P25		PT4025	2TM-P25	
C78	.25	200	512045	P488-25		PJ2P25		PT4025	2TM-P25	
C79	.02	600	512019	P688-02	DF-203	PTE6S2		PT613	6TM-S2	
C80	500	20000	508888	HV20C	TV3-502	MM-C20T5	413-501		20DK-T5	
C81	500	20000	508888	HV20C	TV3-502	MM-C20T5	413-501		20DK-T5	
C82	56	1500	513027							
C83	5000		513013	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C84	.01	400	512055	489ZX-01		PJ4S1		PT411	4TM-S1	
C85	.01	400	512255	489ZX-01		PJ4S1		PT411	4TM-S1	
C88	5.1	1500	513026							

Note 1: Some models use 10MFD in this application.
* : Items C57A, C57B, C57C C57D, R61A, R61B, R61C are combined in one unit.
* : Install DD-103 in series with PC-100 input lead to replace mfgr. original unit.
† : Install 821-01 in series with 1405-01 input lead to replace mfgr. original unit.
‡ : Install 5HK-S1 in series with 101C1 input lead to replace mfgr. original unit.

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stewart-Warner PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	750Ω	2	530292	QJ-341*	RTV-389		WF751	Contrast-Wire Wound-Panel
B	1 Meg	½					UR16-T25 †	Volume Tap②200KΩ-Rear
C	Switch						US-26	Attach to R1B
R2A	500KΩ	½	530746	QU-133	AG-58-S	AB-59	U-50	Tone
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R2A
R3A	100KΩ	½	509893	QU-138	AG-49-S	AB-60	U-41	Brightness
B	Shaft		Not Req.	Not Req.	RS-3	AE-4	Not Req.	Attach to R3A
R4A	2.5Meg	½	508893	QJ-223* *	RTV-313		UF255L	Height-Panel
B	1 Meg	½					UR16L	Vert. Hold-Rear
R5A	10KΩ	½	509302	RTV-341				Focus-Wire Wound-Panel
B	5000Ω	½						Vert. Linearity-Rear
R6A	30KΩ	½	530745	QU -121				Power Booster
B	30KΩ	½		MU-121				

* CONCENTRIKIT EQUIVALENT-KIT K-3, BASE ELEMENTS & SHAFTS W17-105 & P3-131 (Panel) B13-137 & R1-226 (Rear) & SWITCH 76-1.
** CONCENTRIKIT EQUIVALENT-KIT K-3, BASE ELEMENTS & SHAFTS B11-239 & P1-112 (Panel) B11-157 & R1-115 (Rear).
† UNIVERSAL REPLACEMENT (MALLORY EXACT DUPLICATE PART NO. UE23W3).

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Stewart-Warner PART No.	IRC PART No.	NOTES
R7	15KΩ	½	510157	BTS-15K	
R8	470Ω	½	510127	BTS-47K	
R9	100KΩ	½	510172		
R10	160KΩ-5%	½	510774	BTS-160K	
R11	150Ω	½	510139	BTS-1500	
R12	100KΩ-5%	½	510751		
R13	10KΩ	½	510154	BTS-10K	
R14	220KΩ	½	510179		
R15	10KΩ	½	510154	BTS-10K	
R16	15KΩ	½	510157	BTS-15K	
R17	12KΩ-5%	½	510723		
R18	68Ω	½	510116		
R19	390Ω	½	510129	BTS-390	
R20	560KΩ	½	510153		
R21	47Ω	½	510112		
R22	100Ω	½	510113	BTS-100	
R23	4700Ω	½	510750	BTS-4700	Note 1
R24	100Ω	½	510118	BTS-100	
R25	100Ω	½	510119	BTS-100	
R26	100Ω	½	510119	BTS-100	
R27	18KΩ	½	510159		
R28	8200Ω	½	510153	BTS-8200	
R29	5600Ω	½	510168	BTS-5600	
R30	1 Meg	½	510191	BTS-1 Meg	
R31	12KΩ-5%	½	510723	BTS-12K-5%	
R32	4000Ω	½	510753	1 3/4A-4000	
R33	10KΩ	½	510154	BTS-10K	
R34	10KΩ	2	510354	BTS-10K	
R35	470KΩ	½	510184	BTS-470K	
R36	470KΩ	½	510184	BTS-470K	
R37	22KΩ	½	510160	BTS-22K	
R38	2200Ω	½	510142	BTS-2200	
R39	18KΩ	½	510159		
R40	470KΩ	½	510184		
R41	82Ω	½	510117	BTS-82	
R42	4700Ω	1	510249	BTA-4700	
R43	220Ω	½	510124	BTS-220	
R44	220Ω	½	510124	BTS-220	
R45	18KΩ	½	510159	BTS-18K	
R46	22KΩ	½	510160	BTS-22K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Stewart-Warner PART No.	IRC PART No.	NOTES
R47	68KΩ	½	510170	BTS-68K	
R48	10 Meg	½	510197	BTS-10 Meg	
R49	470KΩ	½	510184	BTS-470K	
R50	820KΩ-5%	½	510747	BTS-820K-5%	
R51	680KΩ-5%	½	510746	BTS-680K-5%	
R52	270KΩ	½	510180	BTS-270K	
R53	2.2Meg	½	510193	BTS-2.2Meg	
R54	68KΩ	½	510169	BTS-68K	
R55	270KΩ	½	510180	BTS-270K	
R56	680KΩ	½	510187	BTS-680K	
R57	3900Ω-5%	½	510749	BTS-3900-5%	
R58	6800Ω	½	510151	BTS-6800	
R59	4700Ω-5%	½	510750	BTS-4700-5%	
R60	27KΩ	½	510163	BTS-27K	
R61A	22KΩ	½		BTS-22K	
B	8200Ω	½	◆ 508062	BTS-8200	
C	6800Ω	½		BTS-6800	
R62	1.8Meg-5%	½	510775	BTS-1.8Meg-5%	Note 2
R63	1.5Meg-5%	½	510767	BTS-1.5Meg-5%	
R64	100KΩ	½	510166	BTS-100K	
R65	4.7Meg	½	510768	BTS-4.7Meg	Note 3
R66	6800Ω	½	510151	BTS-6800	
R67	2.2Meg	½	510193	BTS-2.2Meg	
R68	680Ω	½	510134	BTS-680	
R69	560Ω	½	510132	BTS-560	
R70	560Ω	½	510132	BTS-560	
R71	27KΩ	½	510163	BTS-27K	
R72	100KΩ	½	510751	BTS-100K	
R73	100KΩ	½	510751	BTS-100K	
R74	4.7Meg	½	510195	BTS-4.7Meg	
R75	470KΩ	½	510184	BTS-470K	
R76	3300Ω	½	510145	BTS-3300	
R77	1500Ω	½	510139	BTS-1500	
R78	100KΩ	½	510172	BTS-100K	
R79	270KΩ	½	510180	BTS-270K	
R80	680KΩ	½	510187	BTS-680K	
R81	15KΩ	2	510357	BTB-15K	
R82	4700Ω	1	510248	BTA-4700	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Stewart-Warner PART No.	IRC PART No.	NOTES
R83	68Ω	½	510116	BTS-47K	
R84	470KΩ	½	510184	BTS-470K	
R85	100Ω	1	510218	BW-1-100	
R86	12KΩ	5	510758	1 3/4A-12K	
R87	2700Ω	2	510344	BTB-2700	
R88	47KΩ	½	510167	BTS-47K	
R89	1 Meg	2	510390		
R90	600Ω	10	510741	1 3/4A-600	
R91	4000Ω	3	510773	1 3/4A-4000	
R92	220KΩ	½	510179	BTS-220K	

Note 1. Uncoded & "A" series chassis use a 6800Ω resistor in this application.
Note 2. Uncoded chassis use a 2 Meg resistor in this application, "C" series chassis use 1.8Meg.
Note 3. Not used in "C" series chassis.
* Items R61A, R61B, R61C, C57A, C57B, C57C, C57D are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: Stewart-Warner PART No	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No
T1	117VAC ④ 1.94A	665VCT ③ .220A	5VAC ③ 3A	▲ 1.12A SEC. 4 ▲ 8.7A	520487	P-8168 ① ②	P-3078	TP-356	R-39BC

① Drill new mounting holes
② Parallel the two 8.3VAC 5A windings and use as SEC 4

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: Stewart-Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No	NOTES
T2	153Ω	94Ω	508076	A-8125	A-3003	TBO-5 ①	A-97X	Vert. Osc. Trans.
T3	31Ω①Tap ④ 37Ω	4Ω Tap ②, 42Ω, 3.2Ω SEC. 2 0Ω	520489	A-8130 ②③	HVO-10	TFB-5 ④	D-15 ⑤	Horiz. Output Trans.
T4	800ΩTap ③ 9Ω		509375	A-8123 ①	A-3037 ①	TSO-11 ⑥	A-102X	Vert. Output Trans.
T5A	16Ω		115228 ⑧	DY-8	MDF-70 ⑦	TY-5	Y-21 ⑦	Horiz. Deflection Coils
B	4Ω							Vert. Deflection Coils.
T6	12KΩ		182326 ⑧					Focus Coil
T7	1.3Ω		509261 ⑥ 507429 ⑩		MWC-2			Width Coil

① Drill new mounting hole.
② Use with width coil.
③ Use installation schematic No. 1 & 5A.
④ Use width coil (with AGC wdg) with approx. 4-29 Millihenry range.
⑤ Use with width coil WC-11.
⑥ Drill new mounting holes.
⑦ Remove shunting resistors and capacitor.
⑧ Includes cable and plug.
⑨ Includes slug and clip.
⑩ Width coil slug.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Stewart-Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T8	4.3KΩ	3.5Ω	410Ω	.2Ω	509376	A-3877	A-2930	RO-8 ①	S-5X	① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V C IMP	REPLACEMENT DATA: Stewart-Warner PART No.	JENSEN PART No	QUAM PART No	NOTES
SP1	6"	PM	3.5Ω	508157	ST-108 Mod. P8-X	6A1	

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE @ CURRENT 1000 ⁻⁶	REPLACEMENT DATA: Stewart-Warner PART No.	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No.
L1	.220ADC	73Ω	2.9 Hy.	508341	C-2325	C-2991 ①	TR-3300 ①	

① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: Stewart-Warner PART No.	REPLACEMENT DATA: MILLER PART No.	NOTES
L2A	Ant.Coil	0Ω CT	0Ω	520702		Channel 2
B	Ant.Coil	0Ω CT	0Ω	520703		Channel 3
C	Ant.Coil	0Ω CT	0Ω	520704		Channel 4
D	Ant.Coil	0Ω CT	0Ω	520709		Channel 5
E	Ant.Coil	0Ω CT	0Ω	520706		Channel 6
F	Ant.Coil	0Ω CT	0Ω	520707		Channel 7
G	Ant.Coil	0Ω CT	0Ω	520708		Channel 8
H	Ant. Coil	0Ω CT	0Ω	520709		Channel 9
I	Ant. Coil	0Ω CT	0Ω	520710		Channel 10
J	Ant. Coil	0Ω CT	0Ω	520711		Channel 11
K	Ant.Coil	0Ω CT	0Ω	520713		Channel 12
L	Ant.Coil	0Ω CT	0Ω	520713		Channel 13
L3	Fil.Choke	0Ω CT		520518		
L4	Neutralising Coil	0Ω		520701		

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PARTS LIST AND DESCRIPTIONS (Continued)

RF-IF COILS (CONT.)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Stewart - Warner PART No.	REPLACEMENT DATA MILLER PART No.	NOTES
L5A	RF, Mixer Grid & Osc. Coil	0Ω		520722		Channel 2
B	RF, Mixer Grid & Osc. Coil	0Ω		520723		Channel 3
C	RF, Mixer Grid & Osc. Coil	0Ω		520724		Channel 4
D	RF, Mixer Grid & Osc. Coil	0Ω		520725		Channel 5
E	RF, Mixer Grid & Osc. Coil	0Ω		520726		Channel 6
F	RF, Mixer Grid & Osc. Coil	0Ω		520727		Channel 7
G	RF, Mixer Grid & Osc. Coil	0Ω		520728		Channel 8
H	RF, Mixer Grid & Osc. Coil	0Ω		520729		Channel 9
I	RF, Mixer Grid & Osc. Coil	0Ω		520730		Channel 10
J	RF, Mixer Grid & Osc. Coil	0Ω		520731		Channel 11
K	RF, Mixer Grid & Osc. Coil	0Ω		520732		Channel 12
L	RF, Mixer Grid & Osc. Coil	0Ω		520733		Channel 13,
L6	Fil. Choke	0Ω		520520		
L7	RF Choke	0Ω		520714		
L8	1st.Video IF	1.2Ω		520734	6189*	Part No. Includes Core; Core Part No. 509062.
L9	RF Choke	1.3Ω		520715		
L10	Fil. Choke	0Ω		507584	4604	1.5Microhenery
L11	2nd.Video IF	.2Ω		507343	6189 *	Less Core; Core Part No. 507357.
L12	Fil. Choke	0Ω		507584	4604	1.5 Microhenery
L13	RF Choke	2.6Ω		507367	4626	23 Microheneries
L14	3rd.Video IF	.2Ω		507343	6188 *	Less Core; Core Part No. 507357.
L15	Fil. Choke	0Ω		507584	4604	1.5 Microhenery
L16	4th.Video IF	.2Ω		507343	6189 *	Less Core; Core Part No. 507357.
L17	RF Choke	2.6Ω		507367	4626	23 Microheneries
L18	Series Peak. - Coil	6.2Ω		509340		580 Microheneries
L19	Shunt Peak. - Coil	15Ω		509342	4648	394 Microheneries
L20	4.5MC Trap	1.8Ω		509603	1470	Part No. Includes Core & C38:, Core Part No. 507357.
L21	Series Peak. - Coil	10Ω		520689	6180	180 Microheneries
L22	Shunt Peak. - Coil	6.5Ω		509340		580 Microheneries
L23	Sound IF	1.4Ω		509378	1470-A	
L24	Ratio Det.	4.1Ω	1ΩCT	509706	6205■	Tertiary Windings, .4Ω
L25	Fil. Choke	0Ω		507584	4604	1.5 Microhenery
L26	Horiz. Osc.	90Ω		508967	6210	Part No. Includes Core; Core Part No. 508963.

* Enlarge mounting hole.
■ Use adaptor plate.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Stewart-Warner PART No. FUSE	Stewart-Warner PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG P/T	1A 250V	509517		318001 (3AG-1A-P/T)		GJV-1	
M2	3AG P/T	1/4A 250V	508063		318.250 (3AG-1/4A-P/T)		GJV-1/4	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA Stewart-Warner PART No.		NOTES
M3	Bayonet	6-8	.15	Brown	118921		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	Stewart-Warner PART No.	NOTES
M4	RF Tuner	520645	Complete
M5	Crystal Diode	509386	IN64
M6	Switch	520563	TV-Phono Selector
M7	Ion Trap	509688	
	Trimmer Capacitor	520127	Horiz. Drive
	Cabinet	520762-A	Model 21T-9211B
	Cabinet	520762-B	Model 21T-9211C
	Cabinet	520755-A	Model 21C-9211D
	Cabinet	520755-B	Model 21C-9211E
	Cabinet	520769-A	Model 21C-9211F
	Back Cover	115238	Models 21T-9211B, 21T-9211C, 21C-9211D, 21C-9211E
	Back Cover	115225	Model 21C-9211F
	Safety Glass	520499	
	Mask	520496-B	
	Knob	520832	Channel Selector, Models 21T-9211B, 21C-9211D, 21C-9211F
	Knob	520741	Channel Selector, Models 21T-9211C, 21C-9211E
	Knob	520831	Off/On Volume, Models 21T-9211B, 21C-9211D, 21C-9211F
	Knob	520742	Off/On Volume, Models 21T-9211C, 21C-9211E
	Knob	520740-B	Tone, Power Booster, Models 21T-9211B, 21C-9211D, 21C9211F
	Knob	520740-A	Tone, Power Booster, Models 21T-9211C, 21C-9211E
	Knob	509017	Fine Tuning
	Knob	509019	Contrast

TROUBLE SHOOTING AIDS - CONT.

AUDIO

WEAK OR NO SOUND

Substitute V8, V9 and V10. Check circuit components. Check alignment or sound and video IF.

BUZZ

Adjust discriminator secondary for minimum buzz. Substitute V9. Check local oscillator setting. Check for overload at waveform W1. If overloading exists, check AGC network.

DISTORTED

Check audio stages using audio signal generator.

If Undistored	If Distorted:
Check alignment of sound IF and discriminator	Substitute V9 and V10. Check associated components.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check waveform W13.

If Unsatisfactory	If Satisfactory
Substitute V14. Check associated components. Check C78 for open.	Substitute V15, V16 and V17. Check fuse in horizontal output primary. Check T3, T7 and other components of circuit.

WEAK HIGH VOLTAGE

If substitution of V14, V15 and V17 does not correct trouble, follow procedure outlined under loss of high voltage.

BLOOMING

If substitution of V14, V15, V17 and V18 does not correct the trouble, follow procedure outlined under loss of high voltage. Check R89 particularly.

POWER

SMALL RASTER AND WEAK SOUND

Substitute V18. Check filter components. Check B plus circuit for short.

DIM PICTURE

Substitute V18 and check B plus components.
Check picture tube.

GENERAL

NO SOUND, NO PICTURE, NO SNOW

Substitute V2, V3, V4, V5, V6 and V7. Check associated components.

SNOW BUT NO PICTURE OR SOUND

Substitute V1 and V2. Check associated components.

SNOWY PICTURE, GOOD SOUND (IN STRONG SIGNAL AREAS)

Check video IF tubes and components.

INTERMITTENT STREAKS

Check high voltage circuit for corona leakage and arcing.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

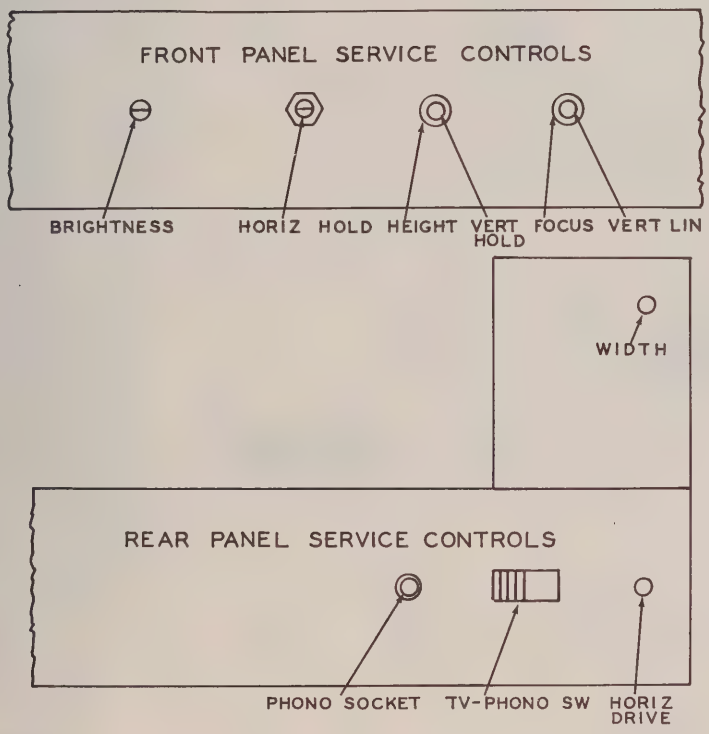
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove 3 wood screws holding metal strip at top of cabinet. Remove metal strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS-"POWER BOOSTER" CONTROL ADJUSTMENT

In moderate to strong signal areas the power booster control should be left at full counter clockwise position. In weak signal areas adjust control clockwise as far as possible without distortion or instability of the picture.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjust the horizontal hold control until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector buzz, adjust the Ratio Detector Secondary (L24) located on top of chassis. (See tube placement chart).

FUSES

Two fuses are used. One for Horiz. Sweep Circuit protection and one for LV Power Supply protection (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by positioning the focus coil. Adjust the three knurled nuts located on the focus coil bracket until picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 6 push on type control knobs from front panel.
2. Remove 7 wood screws. Remove rear cover.
3. Disconnect built-in antenna. Remove 2 wood screws. Remove antenna bracket.
4. Disconnect speaker leads. Remove 2 speaker nuts. Remove speaker.
5. Remove 5 chassis. bolts. Remove chassis.

PHOTOFACT* Folder

TRAD
MODELS T-1853, A

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MODEL T-1853

TRAD
MODELS T-1853, A

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MODELS T-1853, A

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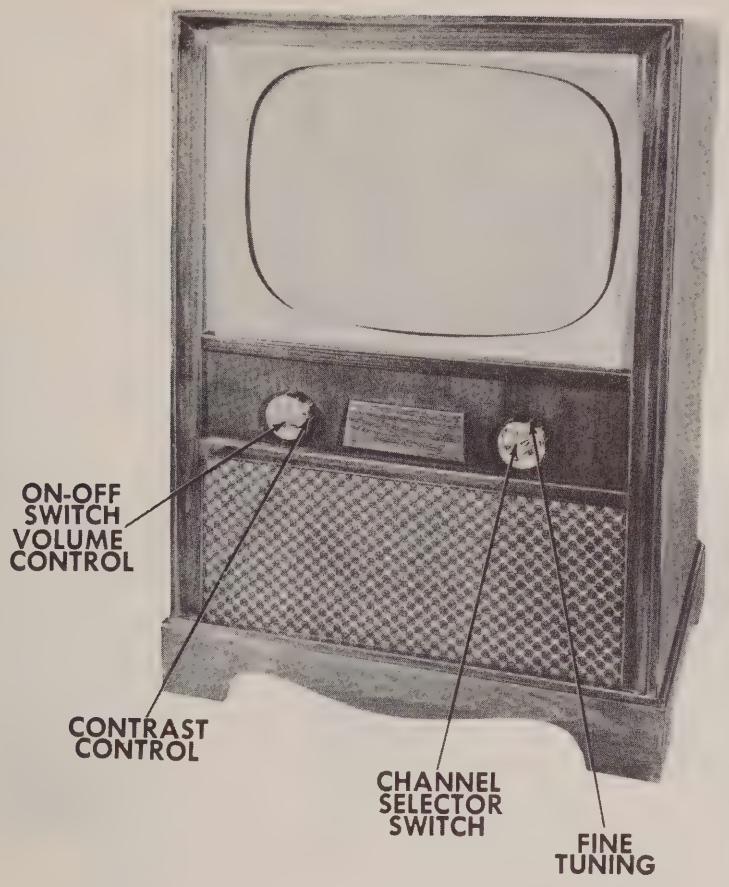

TRAD
MODELS T-1853, A

TRADE NAME	Trad Models T-1853, T-1853A.
MANUFACTURER	Trad Television Corp., 1001 First St., Asbury Park, New Jersey
TYPE SET	Television Receiver
TUBES	Nineteen

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1.74 Amp. @ 117 Volts AC
TUNING RANGE—Channels 2 thru 12, Video IF 26.75MC , Sound IF 22.25MC (Intercarrier).

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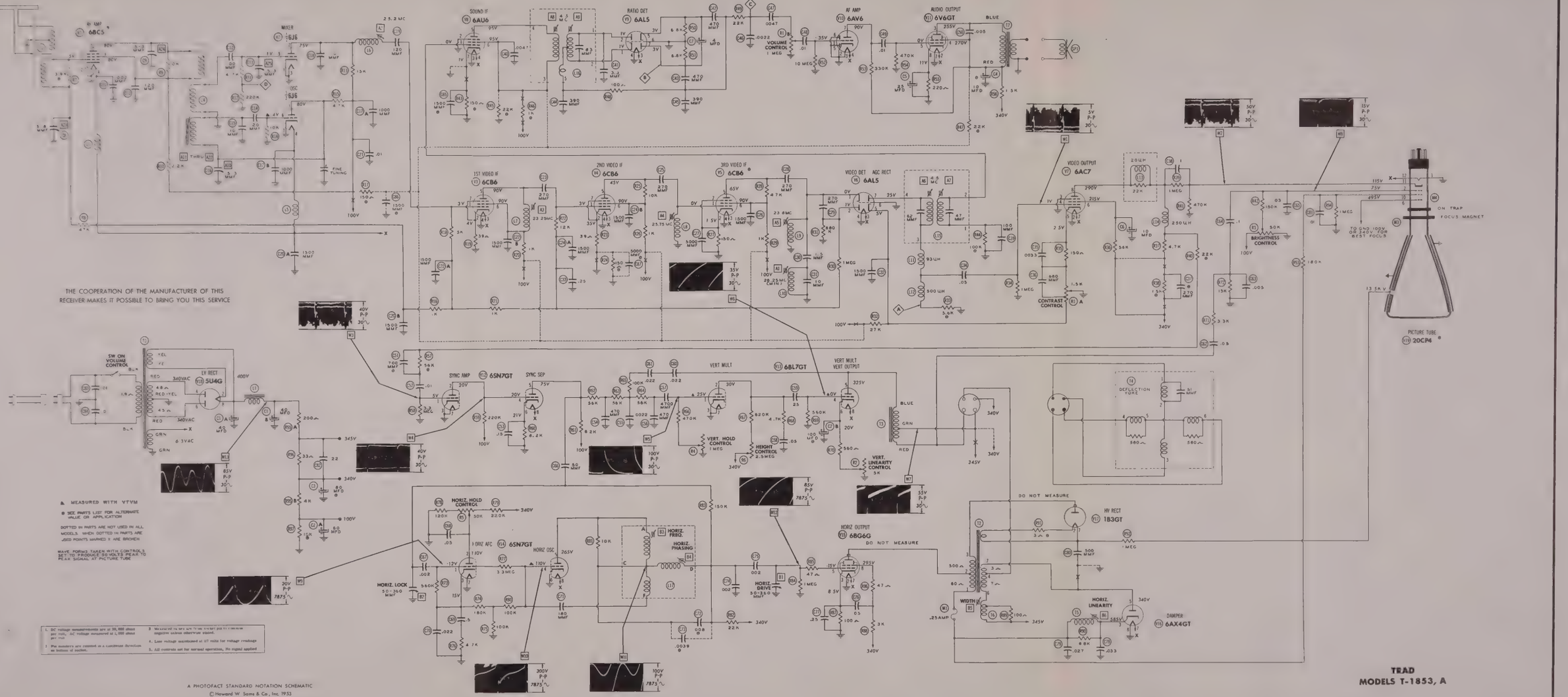
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A MEASURED WITH VTVM
B SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
WAVE FORMS TAKEN WITH CONTROL S SET TO PRODUCE 50 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 30,000 ohms per volt. AC voltage measured at 4,000 ohms per volt.
2. Pin numbers are counted in a counterclockwise direction as bottom of socket.
3. Measured to chassis with signal applied to antenna terminals unless otherwise noted.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation. No signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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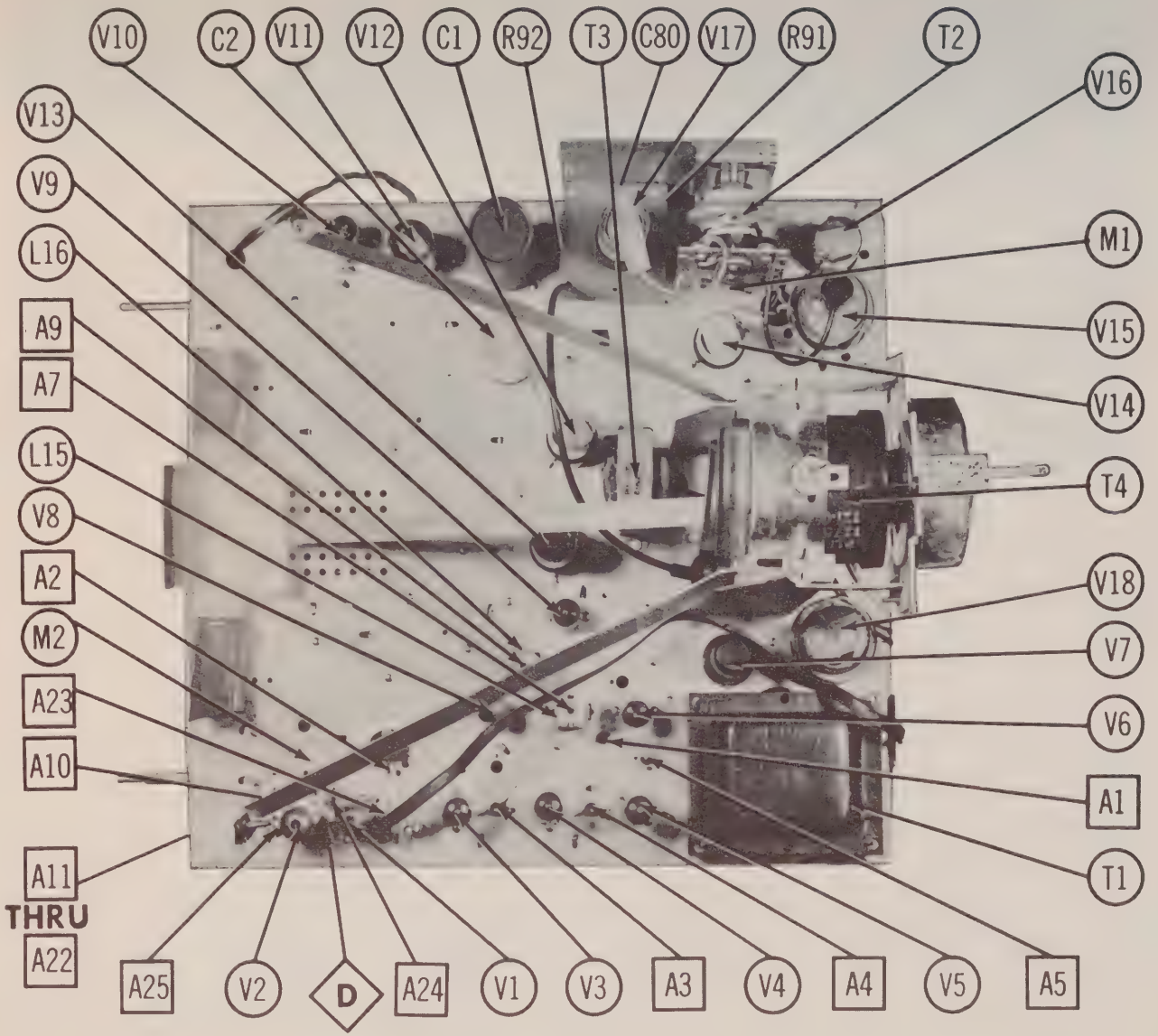

CHASSIS TOP VIEW

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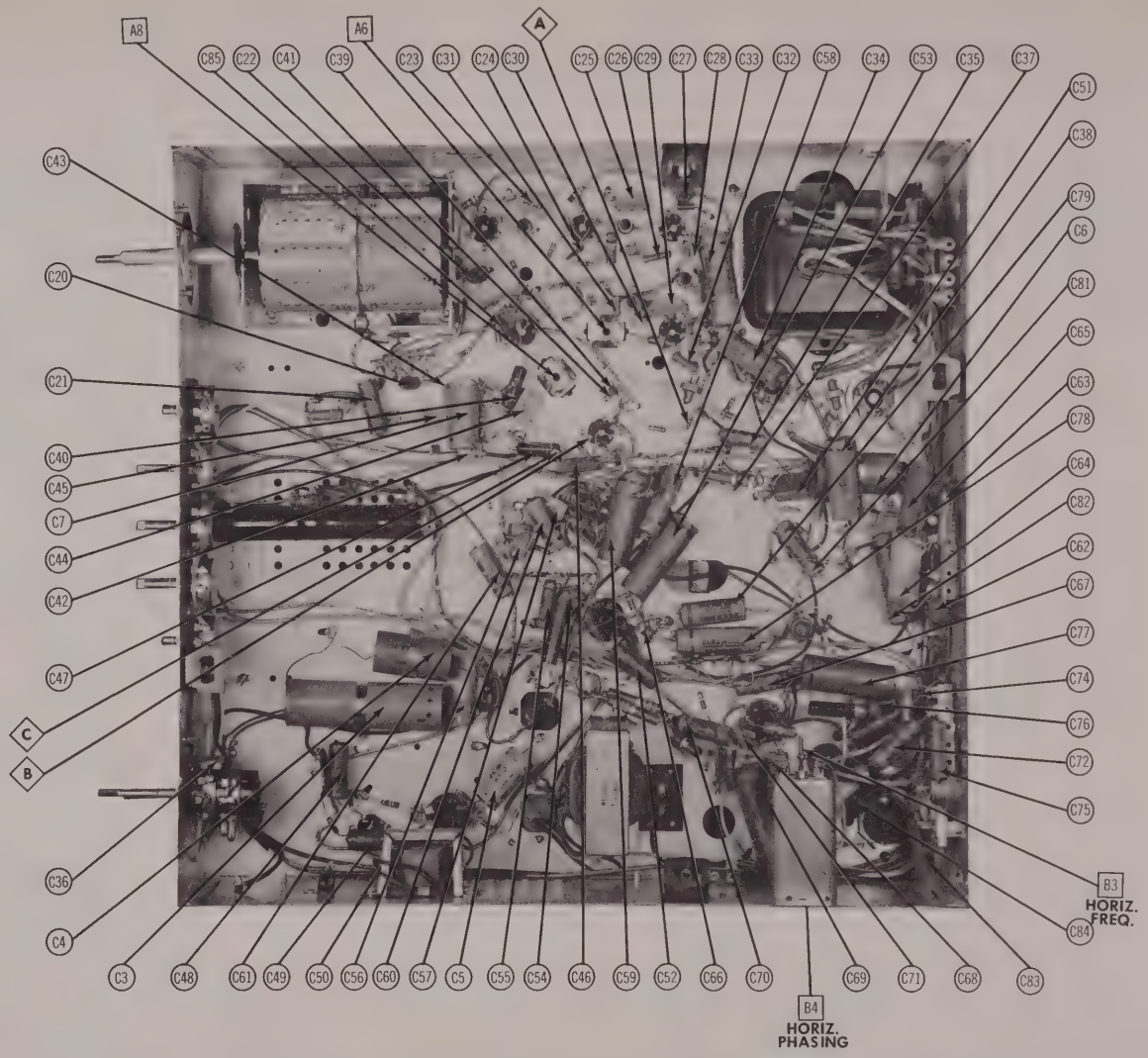
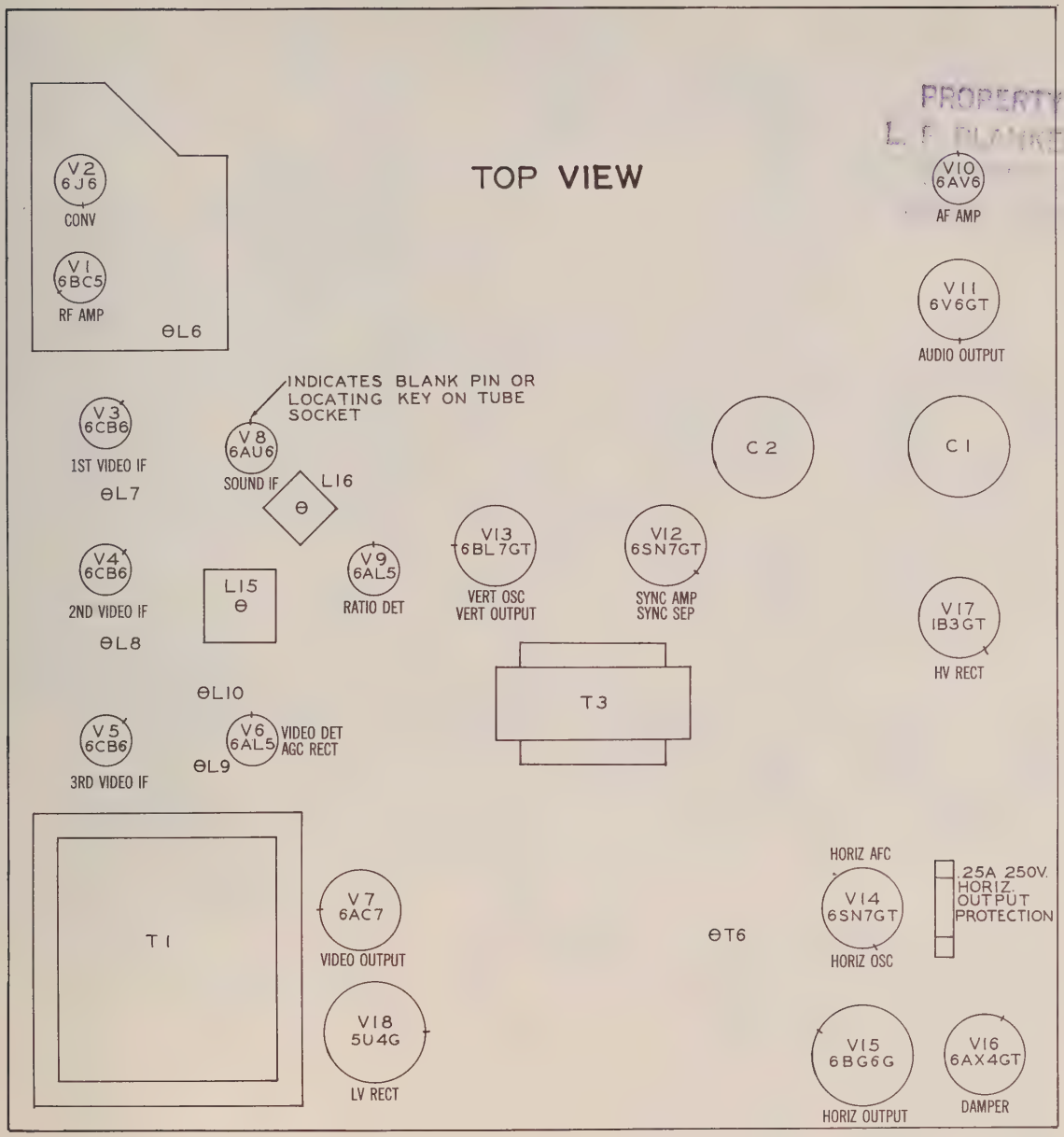
3923 [illegible] ST.



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V18

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6
No pic, no osund, has snow-V1, V2, V3
No pic, has sound, has raster-V7, V19
Has pic, no sound-V8, V9, V10, V11
Overloaded picture- V6

SYNC FAILURE
No vert. sync-V12, V13
No horiz. sync-V12, V14
No vert. or horiz. sync-V12

SWEEP FALLURE
No raster, has sound -V14, V15, V16, V17, V19 Fuse (M1)
No vertical deflection-V13
Poor vert. linearity or foldover-V13
Poor horiz. linearity or foldover-V14, V15, V16
Narrow picture-V14, V15, V16, V17, V18
Vert. off freq-V12, V13
Horiz. off freq-V12, V14

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal oscillator tube (V14).

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed.
This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C33. Connect the positive side to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	28.25MC (Unmod)	Any	DC probe to point ◇A◇ Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	25.2MC	"	"	A2	Adjust for maximum deflection.
3.	"	"	23.25MC	"	"	A3	"
4.	"	"	25.75MC	"	"	A4	"
5.	"	"	23.8MC	"	"	A5	"

OVERALL VIDEO IF RESPONSE CHECK

Leave bias battery as under Video IF Alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC SWP)	22.25MC 23.6MC 26.75MC 28.25MC	Any	Vert. amp. to point ◇A◇. Low side to chassis.		Check for response similar to Fig. 1. If necessary, retouch A2 thru A5 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.001MFD	High side oto pin 1 (cathode) of 6AL5 (V6). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point ◇B◇ Common to chassis.	A6, A7, A8	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point ◇C◇ Common to chassis.	A9	Adjust for a zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.001MFD	High side to pin 1 (cathode) of 6AL5 (V6). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. amp. to point ◇B◇. Low side to chassis.	A6, A7 A8	Disconnect stabilizer capacitor C7. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
8.	"	"	"	"	"	Vert. amp. to point ◇C◇. Low side to chassis.	A9	Reconnect capacitor C7. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A10. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct any individual channel. If adjustment of A10 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω carbon resistors.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. amp. to point ◇A◇. Low side to chassis.	A11	Adjust to place video marker at 50% on high frequency side of response curve. Sound marker should not be higher than 10% response.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A12	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A13	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A14	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A15	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A16	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A17	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A18	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A19	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A20	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A21	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A22	

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon resistors.	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. amp. thru 47KΩ to point (D). Low side to chassis.	A23, A24 A25	Adjust for curve of maximum amplitude and bandwidth similar to Fig. 4.
11.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 4. If markers fall below 70% on any channel. Make slight compromise adjustments of A23, A24 and A25 with channel switch set to that channel, then check all other channels to see that they have not been seriously affected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

TOUCH-UP ALIGNMENT OF A6

Tune receiver to a TV signal and examine picture for evidence of 4.5MC beat interference. If any is noted retouch A6 for minimum interference.

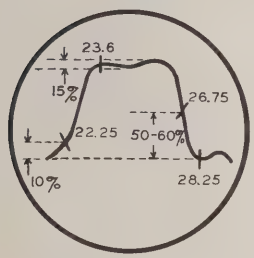


FIG. 1

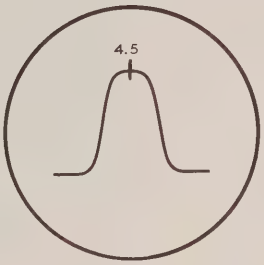


FIG. 2

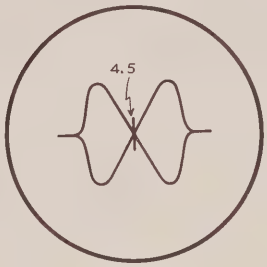


FIG. 3

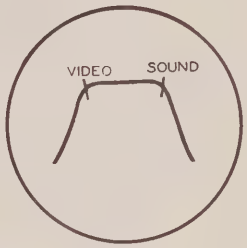
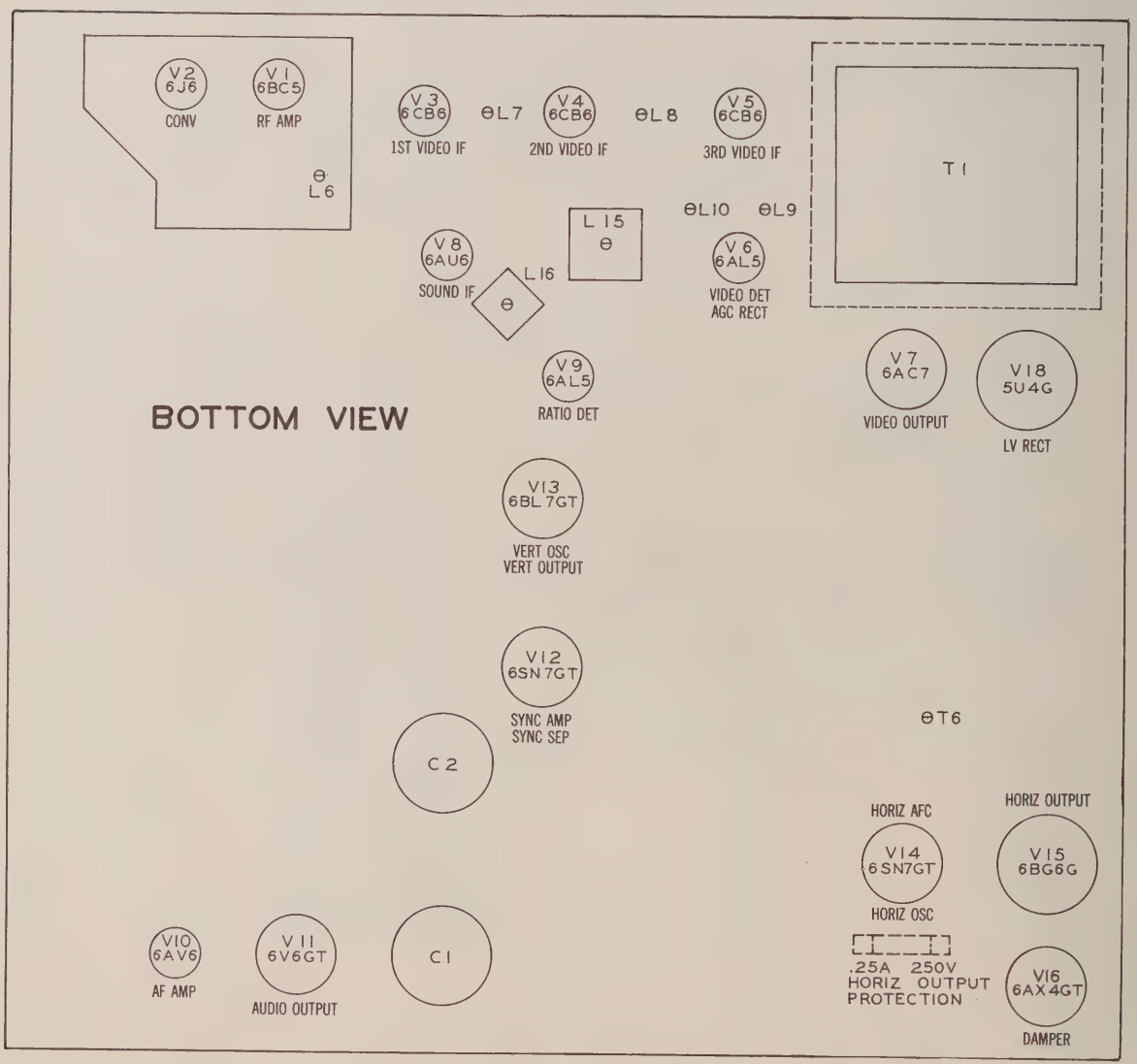


FIG. 4

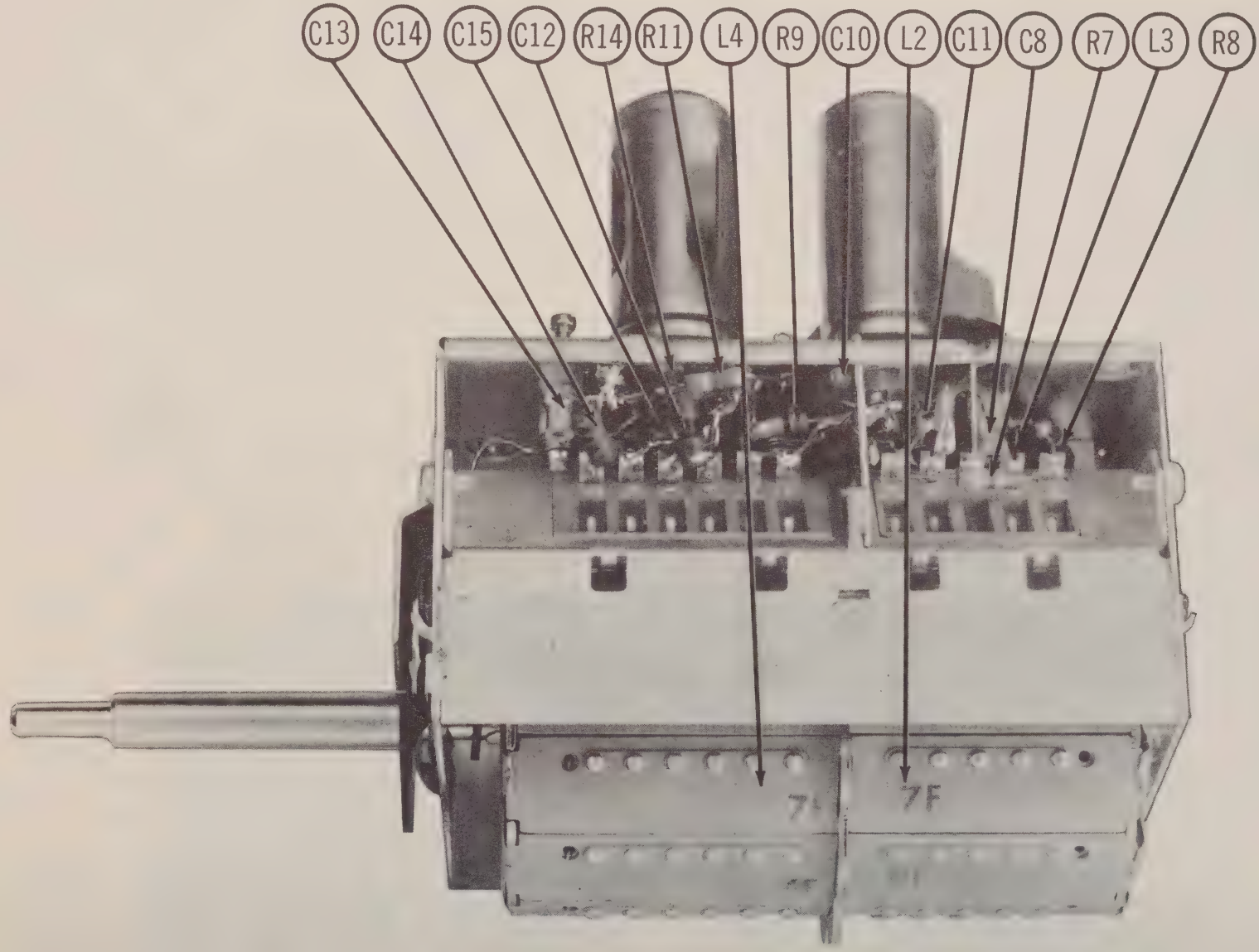
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	2 Meg	0Ω	0Ω	.1Ω	†6.4KΩ	†6.4KΩ	0Ω		
V 2	6J6	†8.9KΩ	†19KΩ	0Ω	.1Ω	225KΩ	10KΩ	0Ω		
V 3	6CB6	1.7Meg	39Ω	.1Ω	0Ω	†5KΩ	†5.2KΩ	39Ω		
V 4	6CB6	1.7Meg	39Ω	.1Ω	0Ω	†15KΩ	†5.2KΩ	39Ω		
V 5	6CB6	.3Ω	150Ω	.1Ω	0Ω	†10KΩ	†5.2KΩ	150Ω		
V 6	6AL5	.3Ω	680KΩ	.1Ω	0Ω	1.1KΩ	0Ω	5.6KΩ		
V 7	6AC7	0Ω	0Ω	0Ω	1 Meg	300Ω	†56KΩ	.1Ω	†6.2KΩ	
V 8	6AU6	100KΩ	0Ω	0Ω	.1Ω	†5.2KΩ	†5KΩ	50Ω		
V 9	6AL5	INF	INF	.1Ω	0Ω	6.8KΩ	0Ω	6.8KΩ		
V 10	6AV6	10 Meg	0Ω	0Ω	.1Ω	0Ω	0Ω	†330KΩ		
V 11	6V6GT	INF	.1Ω	†2.2KΩ	†1.7KΩ	470KΩ	INF	0Ω	220Ω	
V 12	6SN7GT	3.3Meg	†220KΩ	0Ω	†220KΩ	†12.4KΩ	8.2KΩ	0Ω	.1Ω	
V 13	6BL7GT	1.1Meg	†2.9Meg	0Ω	560KΩ	†1.3KΩ	1KΩ	0Ω	.1Ω	
V 14	6SN7GT	700KΩ	†96KΩ	280KΩ	200KΩ	†22KΩ	0Ω	0Ω	.1Ω	
V 15	6BG6G	†3.2KΩ	0Ω	100Ω	INF	1 Meg	INF	.1Ω	†3.2KΩ	Top Cap #100Ω
V 16	6AX4GT	INF	INF	1.2Meg	INF	†250Ω	INF	.1Ω	0Ω	
V 17	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap #600Ω
V 18	5U4G	INF	11KΩ	INF	48.3Ω	INF	44.6Ω	INF	11KΩ	
V 19	20CP4	0Ω	150KΩ	Pin 6 0Ω	Pin 10 180KΩ	Pin 11 340KΩ	Pin 12 .1Ω			

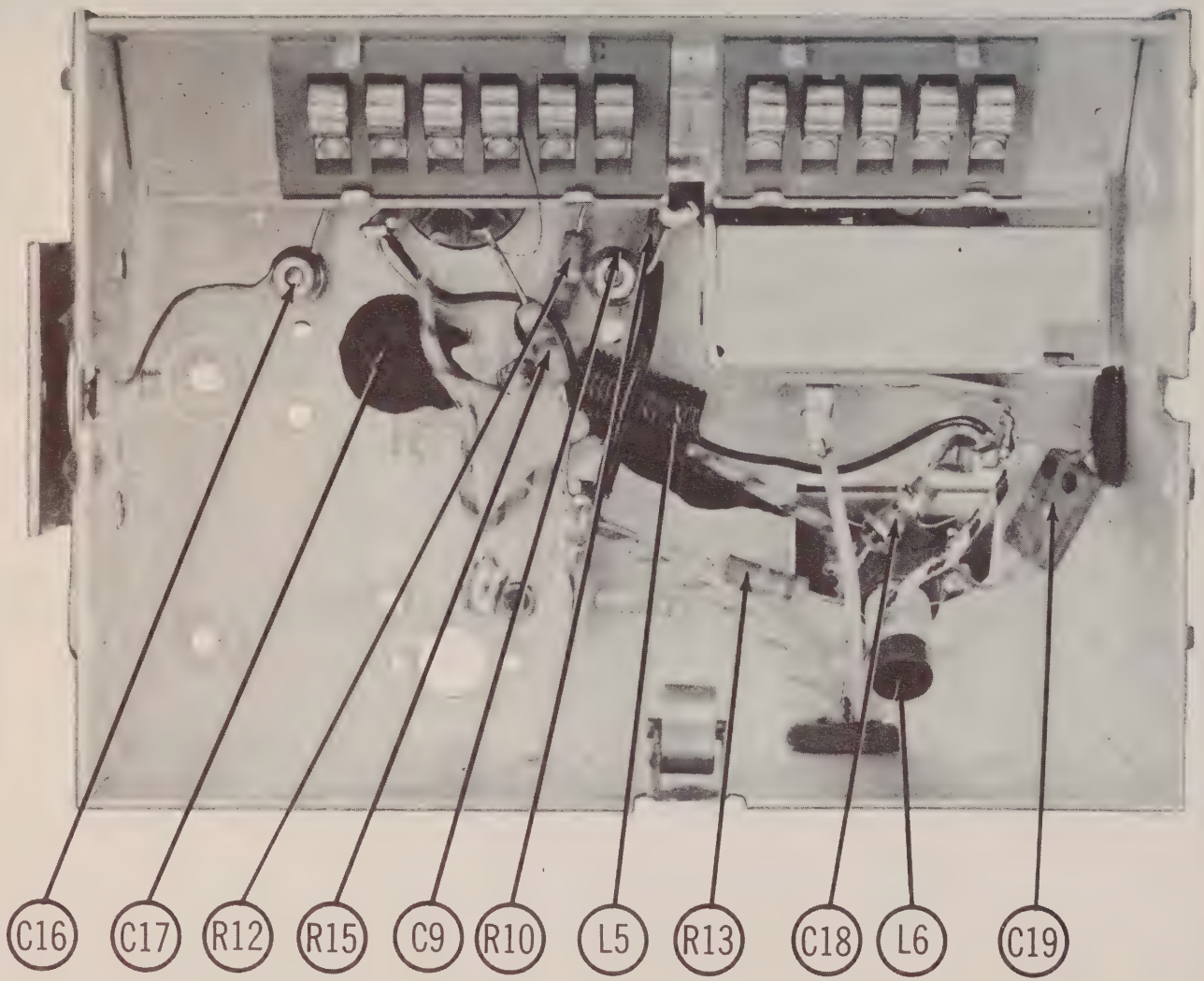
† MEASURED FROM PIN 8 OF V18
# MEASURED FROM PIN 3 OF V16



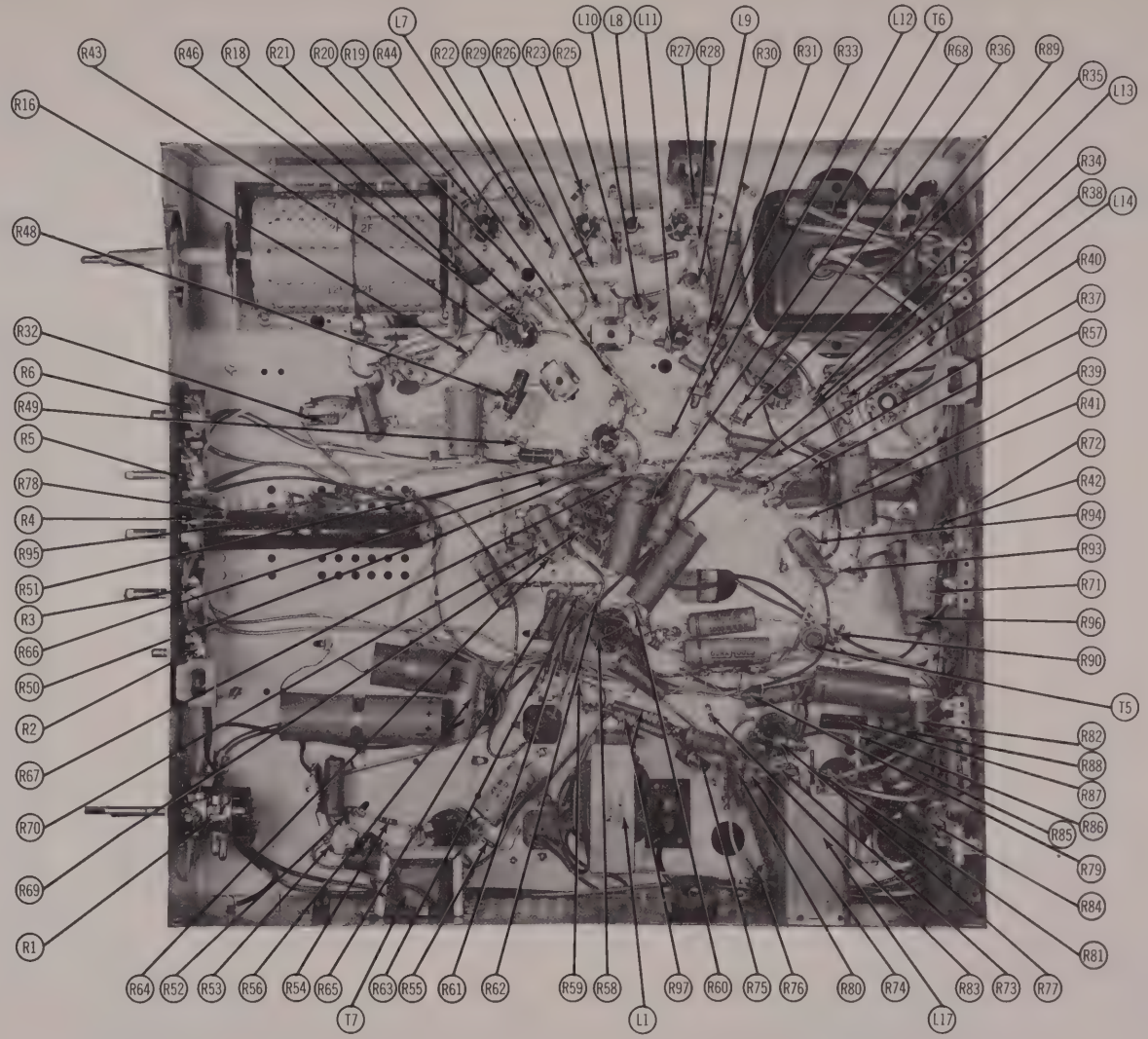
TUBE PLACEMENT CHART



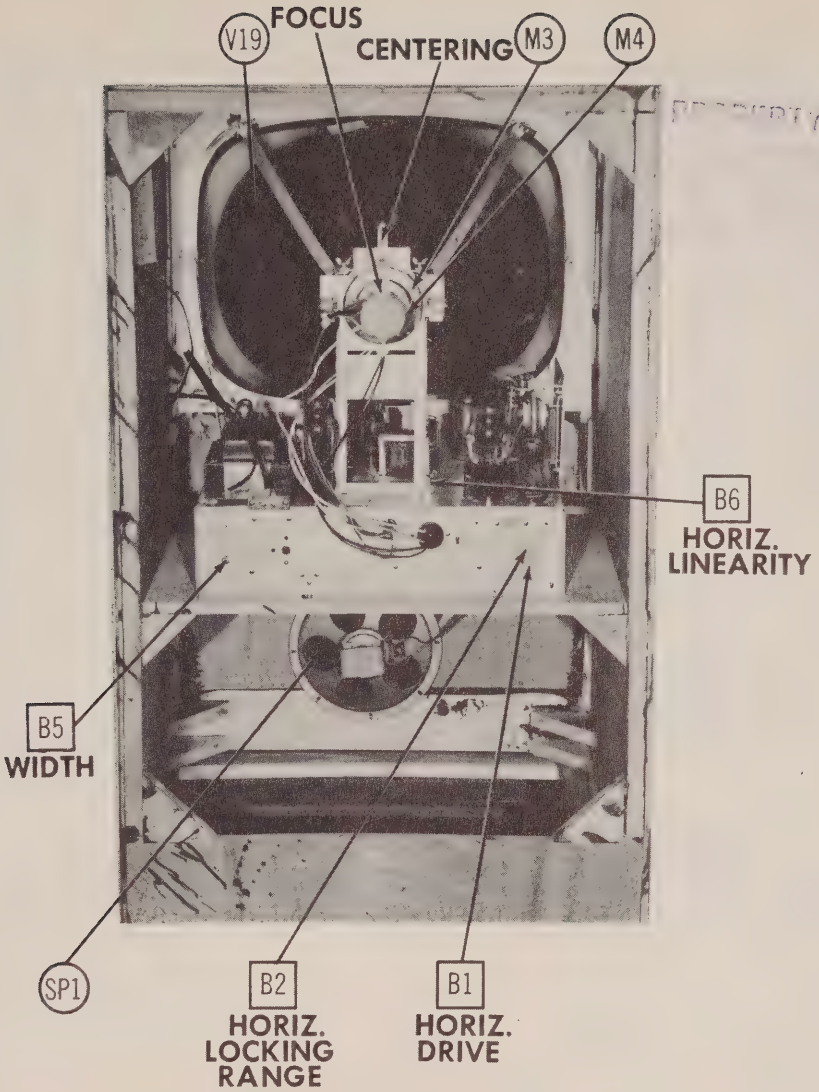
RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CABINET-REAR VIEW

Turn the set on and tune in a TV station, preferably a test pattern.

If horizontal synchronization is unsatisfactory due to misadjustment in the sweep circuit, the following adjustments should be performed:

1. Set horizontal drive trimmer (B1) approximately 1/4 turn from tight.
2. Set Lock Trimmer (B2) approximately 1/2 turn from tight.
3. Set horizontal frequency slug (B3) 3/4" above top of coil dome.
4. Turn horizontal hold control to its mid-position.
5. Adjust the phasing slug (B4) for horizontal sync .
6. Turn horizontal hold control fully counter clockwise and interrupt the signal by turning off channel and back again. 2 to 3 diagonal bars should appear.
7. Momentarily interrupt the signal as in Step 6, but with horizontal hold at mid-position and at extreme clockwise rotation. Picture should return to sync in each case.
8. If picture jumps as horizontal hold is adjusted clockwise too much sync is indicated and lock trimmer B2, should be tightened slightly and B4 readjusted if necessary. If picture will not return to sync in Step 7 loosen B2 slightly.

Adjust B1 counter clockwise as far as possible with presence of vertical white lines or compression of center of picture.

Adjust width slug (B5) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B6) for a picture that is symmetrical from left to right.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6BL8	6BL8	TBD	
B	RF Amplifier	6AG5	6AG5	TBD	
C	RF Amplifier	6CB6	6CB6	TCM	
V2	Converter	6J6	6J6	TBF	
V3	1st. Video IF Amp.	6CB6	6CB6	TCM	
V4	2nd. Video IF Amp.	6CB6	6CB6	TCM	
V5A	3rd. Video IF Amp.	6CB6	6CB6	TCM	
B	3rd. Video IF Amp	6AG5	6AG5	TBD	
V6	Video Detector-AGC Rectifier	6AL5	6AL5	6BT	
V7	Video Output	6AC7	6AC7	8M	
V8	Sound IF Amp.	6AU6	6AU6	TBM	
V9	Ratio Detector	6AL5	6AL5	6BT	
V10	AF Amplifier	6AV6	6AV6	7BT	
V11	Audio Output	6V6GT	6V6GT	7B	
V12	Sync Amplifier - Sync. Seperator	6SN7GT	6SN7GT	8BD	
V13	Vert. Multivibrator Vert. Output	6BL7GT	6BL7GT	8BD	
V14	*Horiz. AFC-Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V15	Horiz. Output	6BG6G	6BG6G	5BT	
V16	Damper	6AX4GT	6AX4GT	4CG	
V17	HV Rectifier	1B3GT	1B3GT	3C	
V18	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V19A	20CP4	20CP4	12D	① Circuit changes necessary
		20CP4A ①	12D	② 3/8" longer.
		20DP4 ②	12D	
		20DP4A ① ②	12D	
		20HP- ① ②	12C	
		20HP4A ① ②	12C	
		20MP4 ① ②	12C	
		20LP4 ① ②	12C	
B	21FP4			

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C1A	.40	450		AFH2-57		BO45		FP238	TVL-2764	
B	.40	450								
C2A	.60	250		AFH3-178		C139		FP335	TVL-3711	
B	.100	25								Note 1
C3	80	450		PRS450/80		BR8045		ST845	TVA-1716	Note 2
C4	10	450								Note 2
C5	25	25		PRS25/25		BR252A		TC26	TVA-1205	
C6	10	450		PRS450/10		BR1045A		TC72	TVA-1706	
C7	4	50		PRS150/4		BR550		TC30	TVA-1303	
C8	3-8				829-10					
C9	.5-3				829-3			CT585A		
C10	120			SI120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C11	1000			BPD-001	DD-102	TM5D1	801-001	DC-531	5HK-D1	
C12	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C13	.5-3				829-3			CT585A		
C14	20			SI20NP0	TCZ-20		NP0K-200	ZT-542	5TCC-Q2	
C15	10			SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C16	.5-3				829-3			CT585A		
C17A	1000			BPD-2X001	DD-2-102	TM5DD1	812-001	DCD-521	5HK-2D1	
B	1000									
C18	10			SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C19	120			SI120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C20A	1500			BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C21	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C22A	1500			BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C23	270	500		SI270	D6-271		GP2K-271	UC-5327	5GA-T27	
C24A	1500			BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C25	270	500		SI270	D6-271		GP2K-271	UC-5327	5GA-T27	
C26	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C27	5000			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C28	270	500		SI270	D6-271		GP2K-271	UC-5327	5GA-T27	
C29	270	500		SI270	D6-271		GP2K-271	UC-5327	5GA-T27	
C30	1.5			SI1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C31	10			SI10	D6-100	5W5QL	GP1K-100	UC-541	5GA-Q1	
C32	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C33	.25	400		P488-25		PTE4P25		PT4025	4TM-P25	
C34	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C35	.0033	600		P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D3	
C36	680	500		SI680	D6-681		GP2K-681	UC-5368	5GA-T68	
C37	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MC241	1FM-33	
C38	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C39	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C40	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C41	3.3			SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C42	470	500		1469-0005		5R5T5		MCB245	MS-35	
C43	470	500		1469-0005		5R5T5		MCB245	MS-35	
C44	390	500		1468-0004	D6-391	5W5T4	GP2K-391	MC243	1FM-34	
C45	390	500		1468-0004	D6-391	5W5T4	GP2K-391	MC243	1FM-34	
C46	.0022	600		P688-0022	D6-222	PTE6D22	GP2-333-223	PT6222	6TM-D22	
C47	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C48	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C49	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C50	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C51	700	500		1479-0007		2R5T7			MS-37	
C52	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C53	.15	600		P688-15		PTE6P15		TP417		
C54	470	500		1469-0005		5R5T5		MCB245	MS-35	
C55	.0022	600		P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C56	470	500		1469-0005		5R5T5		MCB245	MS-35	
C57	4700	500		1464-005		IDR5D5		MCB465	MS-25	
C58	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C59	.25	400		P488-25		PTE4P25		PT4025	4TM-P25	
C60	.022	600		P688-022		PTE6S22		PT6122	6TM-S22	
C61	.022	600		P688-022		PTE6S22		PT6122	6TM-S22	
C62	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C63	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C64	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C65	.03	600		P688-03		PTE6S3		PT613	6TM-S3	
C66	50			SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	
C67	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C68	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C69	.5	200		P288-5		PJP5		PT405	2TM-P5	
C70	.022	400		P488-022	DF-203	PTE4S22		PT4125	4TM-S22	
C71	180	500								
C72	.008	400								Note 3
C73	.0039	600		1464-004		IDR5D4		MCB463	MS-34	Note 3
C74	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C75	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C76	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C77	.25	400		P488-25		PTE4P25		PT4025	4TM-P25	
C78	.033	1000		P1088-033						
C79	.027	1000								
C80	500	20000		HV20C	TV3-501	MM-C20T5	413-501		20DK-T5	
C81	.01	1000		P1088-01		PTE16S1		PT611	MB-S1	
C82	.22	400		P488-22		PTE4P25		PT4025	4TM-P22	
C83	.01	600		P688-01		PTE6S1		PT611	6TM-S1	
C84	.01	600		P688-01		PTE6S1		PT611	6TM-S1	
C85	1500			BPD-0015	DD-152	TM5D15	801-152	DC-5215	5HK-D15	
C86	1500			BPD-0015	DD-152	TM5D15	801-152	DC-5215	5HK-D15	
C87	5000			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	

Note 1. Some Models use 125MFD in this application.
Note 2. Some Models combine C3 and C4 in a dual unit.
Note 3. In Models using C73, C72 is .0039MFD.
When C72 is .008MFD, C73 is not used.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: MALLORY PART No.	INSTALLATION NOTES
R1A	1500Ω	3	131-0017	QJ-419*	RTV-334			Contrast-Trap 1000Ω-Wire Wound-Panel
B	1 Meg	½						Volume & Switch-Rear
R2A	5000Ω	½	131-0018	QU1-114	AG-19-S	AB-10	8U-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R2A
R3A	50KΩ	½	131-0012	QU1-123	AG-44-S	AB-31	U-35	Brightness
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R3A
R4A	1 Meg	½	131-0013	QU1-137	AG-61-S	AB-89	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R4A
R5A	50KΩ	½	131-0012	QU1-123	AG-44-S	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R5A
R6A	2.5Meg	½	131-0019	QU1-239	AG-84-S	AB-83	8U-585	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A

* CONCENTRIKIT EQUIVALENT-KIT K-3, BASE ELEMENTS & SHAFTS W17-109 & P3-118 (Panel)
B13-137 & R1-207 (Rear) & SWITCH 78-1.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R7	3900Ω	1		BTS-3900	Note 1
R8	47KΩ	½		BTS-47K	
R9	10KΩ	½		BTS-10K	
R10	2200Ω	½		BTS-2200	
R11	4700Ω	½		BTS-4700	
R12	220KΩ	½			
R13	15KΩ	½			
R14	10KΩ	½		BTS-10K	
R15	4700Ω	½		BTS-4700	
R16	1000Ω	½		BTS-1000	
R17	150Ω	½		BTS-150	
R18	15KΩ-5%	½		BTS-15K-5%	
R19	39Ω	½			
R20	1000Ω	½		BTS-1000	
R21	1000Ω	½		BTS-1000	
R22	12KΩ-5%	½		BTS-12K-5%	
R23	39Ω	½			
R24	150Ω	½		BTS-150	
R25	10KΩ	½		BTA-10K	
R26	1000Ω	½		BTS-1000	
R27	150Ω	½		BTS-150	
R28	4700Ω-5%	½		BTS-4700-5%	
R29	1000Ω	½		BTS-1000	
R30	1 Meg	½		BTS-1 Meg	
R31	680KΩ	½		BTS-680K	
R32	27KΩ	½		BTA-27K	
R33	5600Ω	½		BTS-5600	
R34	1 Meg	½		BTS-1 Meg	
R35	150Ω	½		BTS-150	
R36	56KΩ	½		BTS-56K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R37	4700Ω	3		BTB-4700	
R38	1500Ω	½		BTS-1500	
R39	1 Meg	½		BTS-1 Meg	
R40	22KΩ	½		BTS-22K	
R41	470KΩ	½		BTS-470K	
R42	150KΩ	½		BTS-150K	
R43	150Ω	½		BTS-150	
R44	105KΩ	½		BTS-100K	Note 2
R45	22KΩ	½		BTS-22K	Note 2
R46	1000Ω	½		BTS-1000	Note 3
R47	22KΩ	2		bTB-22K0	
R48	100Ω	½		BTS-100	
R49	22KΩ	½		BTS-22K	
R50	6800Ω	½		BTS-6800	
R51	6800Ω	½		BTS-6800	
R52	10 Meg	½		BTS-10 Meg	
R53	330KΩ	½		BTS-330K	
R54	470KΩ	½		BTS-470K	
R55	220Ω	½		BTB-220	
R56	1500Ω	5		1 3/4A-1500	
R57	56KΩ	½		BTS-56K	
R58	3.3Meg	½		BTS-3.3Meg	
R59	220KΩ	½		BTS-220K	
R60	8200Ω	½		BTS-8200	
R61	8200Ω	2		BTB-8200	
R62	56KΩ	½		BTS-56K	
R63	56KΩ	½		BTS-56K	
R64	56KΩ	½		BTS-56K	
R65	100KΩ	½		BTS-100K	
R66	470KΩ	½		BTS-470K	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R67	820KΩ	½		BTS-820K	
R68	4700Ω	½		BTS-4700	
R69	560KΩ-5%	½		BTS-560K-5%	
R70	560Ω	½		BTS-560	
R71	3300Ω	½		BTS-3300	
R72	15KΩ-5%	½		BTS-15K-5%	
R73	560KΩ-5%	½		BTS-560K-5%	
R74	180KΩ	½		BTS-180K	
R75	100KΩ-5%	1		BTA-100K-5%	
R76	4700Ω	½		BTS-4700	
R77	3.3Meg-5%	1		BTA-3.3Meg-5%	
R78	130KΩ	½		BTS-130K	
R79	220KΩ	½		BTS-220K	
R80	100KΩ-5%	1		BTA-100K-5%	
R81	10KΩ	½		BTS-10K	
R82	22KΩ	½		BTA-22K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R83	150KΩ	½		BTS-150K	
R84	1 Meg	½		BTS-1 Meg	
R85	47Ω	½			
R86	47Ω	2			
R87	100Ω	2		BW-2-100	
R88	3000Ω	3			
R89	100Ω	5		1 3/4A-100	
R90	6800Ω	½		BTS-6800	
R91	3Ω	5			Note 5
R92	1 Meg	½			
R93	180KΩ	½		BTS-180K	
R94	1 Meg	½		BTS-1 Meg	
R95A	200Ω	25			
B	4000Ω	25			
R96	33Ω	2			
R97	15KΩ	5		1 3/4A-15K	Note 4

Note 1. Some models use a 3300Ω resistor in this application.
Note 2. Used only in models T-1853 & T-1853A.
Note 3. Models T1853 & T-1853A used a 10KΩ in this application.
Note 4. Some models use two 33KΩ resistors in parallel to obtain correct value.
Note 5. Some models use a 3.3Ω resistors in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	REPLACEMENT DATA: RCA TYPE No.
T1	117VAC	680VCT @ 174A	5VAC @ 3A	6.3VAC @ 8A		P-8168 ①②	P-3070	TP-370 ①		

① Drill new mounting holes.
② Parallel the two 6.3V. windings and use as Sec. 3.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE SEC.	RATING: DC RESISTANCE	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No	REPLACEMENT DATA: RCA TYPE No.	NOTES
T2	580Ω tap @ 60Ω	10Ω tap @ 7Ω		A-8130 ①②	HVG-7 ②③	TFB-12	D-14 ③④	2341 ④	Horiz. Output Trans.
		SEC. 2 0Ω							
T3	1100Ω tap ⑤	180		A-8123	A-3097	TSO-11 ⑤	A-102X	222T1	Vert. Output Trans.
T4A	17Ω			DY-9A	MDF-70	TY-3 ⑥	Y-17	21DS	Horiz. Deflection Coils
B	60Ω								Vert. Deflection Coils
T5	40Ω			WC-5 ⑦	MWC-1 ⑦	TWL-1	WC-11		Horiz. Lin. Coil
T6	7Ω tap @ 5Ω								Width Coil

① Use with Width Coil WC-5
② Wire as shown on installation schematic #4.
③ Use with Width Coil MWC-1.
④ Use with Width Coil WC-11
⑤ Drill new mounting holes.
⑥ Use original deflection coil network.
⑦ Enlarge mounting hole.
⑧ See installation sheet packed with unit for terminal connections.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	NOTES
T7	4.1KΩ	3.6Ω	310Ω	.7Ω		A-3677	A-2930	RO-9	S-3X	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: TRAD PART No	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	8"	PM	3.6Ω		ST-115 Mod. P8-V	8A21	

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE @ CURRENT 1000 ~(∿)	REPLACEMENT DATA: TRAD PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.
L1	.200ADC	27Ω	1 Hy.		C-2328	C-2991	C-17X	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	TRAD PART No.	MERIT PART No.	
L2	Ant. Coils	0Ω	0Ω			
L3	Fil. Choke	0Ω				
L4	RF, Mixer Grid & Osc. Coils	0Ω				
L5	Fil. Choke	0Ω				
L6	1st. Video IF	1Ω			TV-102 *	
L7	2nd. Video IF	.3Ω			TV-103 *	
L8	3rd. Video IF	.3Ω			TV-102 *	
L9	4th. Video IF	.3Ω			TV-103 *	
L10	Cathode Trap	.3Ω			TV-112 *	
L11	Series Peaking Coil	4.2Ω			TV-181	93 Microhenries
L12	Shunt Peaking Coil	11Ω			TV-188	500 Microhenries
L13	Series Peaking Coil	5Ω			TV-182	20 Microhenries, wound on 22KΩ resistor
L14	Shunt Peaking Coil	7.5Ω			TV-185	250 Microhenries
L15	Sound IF	1.9Ω	1.9Ω		TV-113	
L16	Ratio Det.	5.5Ω	2ΩCT		TV-115	Tertiary Winding - .6Ω
L17	Horiz. Osc.	80Ω			TV-162	Pri. tapped @ 22Ω -Horiz. Waveform Winding -45Ω

* Enlarge mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			TRAD PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG P/T	1/4A 250V			318.250 (3AG-1/4A-P/T)		GJV-1/4	

MISCELLANEOUS

ITEM No.	PART NAME	TRAD PART No.	NOTES
M2	RF Tuner		
M3A	Focus Magnet		Includes centering device (Used with 20CP4)
B	Centering Magnet		(Used with 21FP4)
M4	Ion Trap		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removal of the Channel Selector and Fine Tuning knobs.

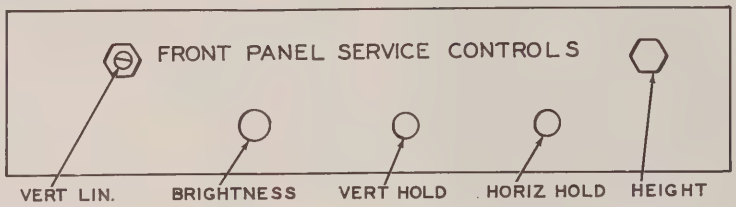
PICTURE TUBE SAFETY GLASS CLEANING

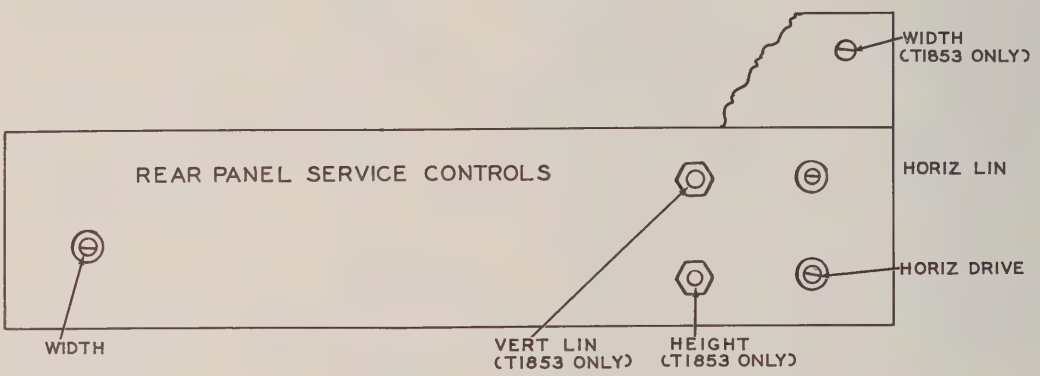
For picture tube safety glass cleaning , it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is neces sary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION





HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of Horiz. Oscillator it is necessary to remove chassis. For correct adjustment see Horiz. Sweep Circuit Adj. on page 13.

SOUND IF DETECTOR BUZZ ADJ.

To eliminate Sound IF Detector buzz, adjust the Ratio Detector Secondary (L16) located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for Horiz. Sweep Circuit protection. For location see tube placement chart.

CENTERING

Centering is accomplished by the adjustment of two magnetic rings which fit around the neck of the picture tube, flush against the deflection yoke. Rotate the two rings around the picture tube until proper centering of picture is obtained.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 5 wood & 2 metal screws. Remove rear cover.
3. Disconnect built-in antenna & speaker.
4. Remove 3 chassis bolts. Remove chassis.
5. Remove 2 speaker nuts. Remove speaker.

...LOWSHIP
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...ER, COLORADO

TRUETONE
MODELS D-2102A, B, D-2103A, B

TRUETONE
MODELS D-2102A, B, D-2103A, B

TRUETONE
MODELS D-2102A, B, D-2103A, B

TRADE NAME	Truetone Models D-2102A, B, D-2103A, B.
SUPPLIER	Western Auto Supply Co., 2107 Grand Avenue, Kansas City, Missouri.
TYPE SET	AD-DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types: 12BE6 Conv., 12BA6 IF Amp., 12AV6 (or) 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 25Z6GT (or) 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1600KC RATING .42 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, set pointer approximately 1/4" above molding at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620KC (400∿ Mod.)	"	"	A5	Adjust for maximum output.
3.		Loop.	1400KC (400∿ Mod.)	Tune for maximum output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL D-2102A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		Truetone PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3A	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
B	Det-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5A	Rectifier	25Z6GT	25Z6G	7Q	Used in D-2102A and D-2103A.
B	Rectifier	35Z5GT	35Z5GT	6AD	Used in D-2102B and D-2103B.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Truetone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	8C-17391	PRS150/50-30		EDL5315		2N520	TVA-2450	Blue
B	30	150								Red
C2	.05	200	8D-10770	P288-05	DF-503	PJ-2S5		PT415	2TM-S5	
C3A	220									
B	.002									
C	.005		♦201-19303		♦PC-150		♦1408-01		♦103C4	
D	250									
E										
C4	.02	400	8D-10774	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C5	.047	400	8J-16081	489ZX-05		PJ4S5		PT4147	4TM-S47	
C6	.09	400	8D-11251							

♦ Items C3A, C3B C3C, C3D, C3D, R5A, R5B and R5C are combined in one unit. When replacing items separately, C3D and C3E should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Truetone PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	A-10A-19788	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume.
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A.
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A.

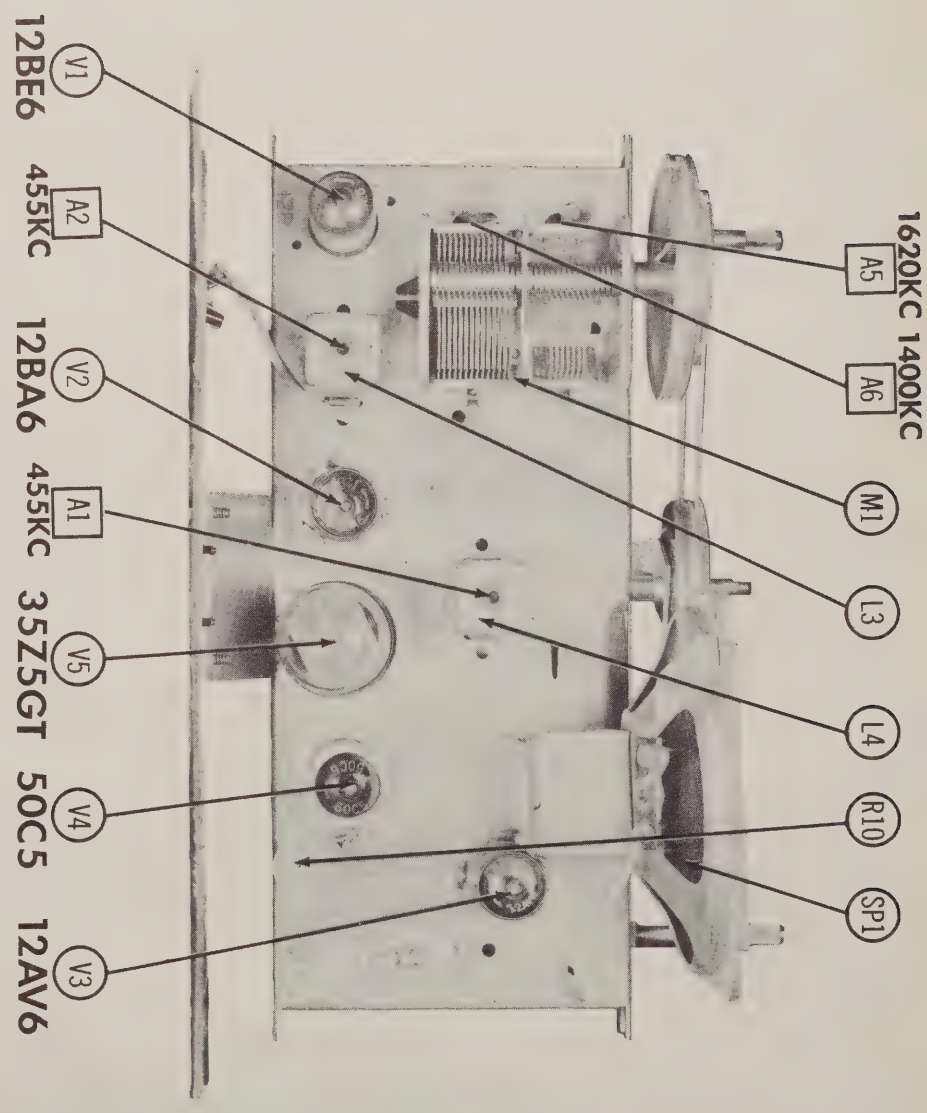
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Truetone PART No.	IRC PART No.	
R2	47KΩ	½	9B1-82	BTS-47K	
R3	120Ω	½		BTS-120	Note 1.
R4	3, 3Meg	½	9B1-34	BTS-3, 3Meg	
R5A	6, 8Meg	½		BTS-6, 8Meg	
B	470KΩ	½	♦201-19303	BTS-470K	
C	470KΩ	½		BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Truetone PART No.	IRC PART No.	
R6	150Ω	½	9B1-52	BTS-150	
R7	1000Ω	1	9B2-62	BTA-1000	
R8	27Ω	½	9B1-43		
R9	30Ω	½			Note 2.
R10	100Ω	7		1-3/4A-100	Note 2.
R11	220KΩ	½	9B1-27	BTS-220K	

Note 1: Some models use A220Ω resistor in this application.
Note 2: Not used in all models.
♦: Items R5A, R5B, R5C, C3A, C3B, C3C, C3D and C3E are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		Truetone PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.16KΩ	3.2Ω	165Ω	.52Ω	12C17595	A-3332	A-3025	R0-2 ①	S-2X ①	

① Drill one new mounting hole.

SPEAKER

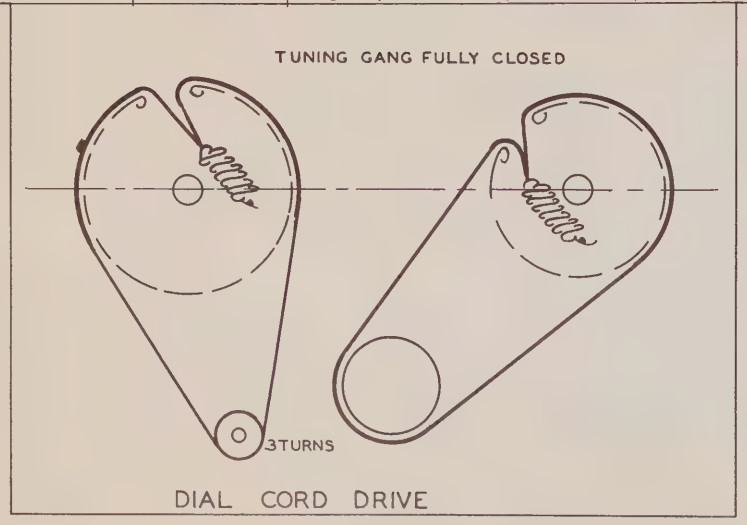
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Truetone PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.2Ω	18A-19554	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

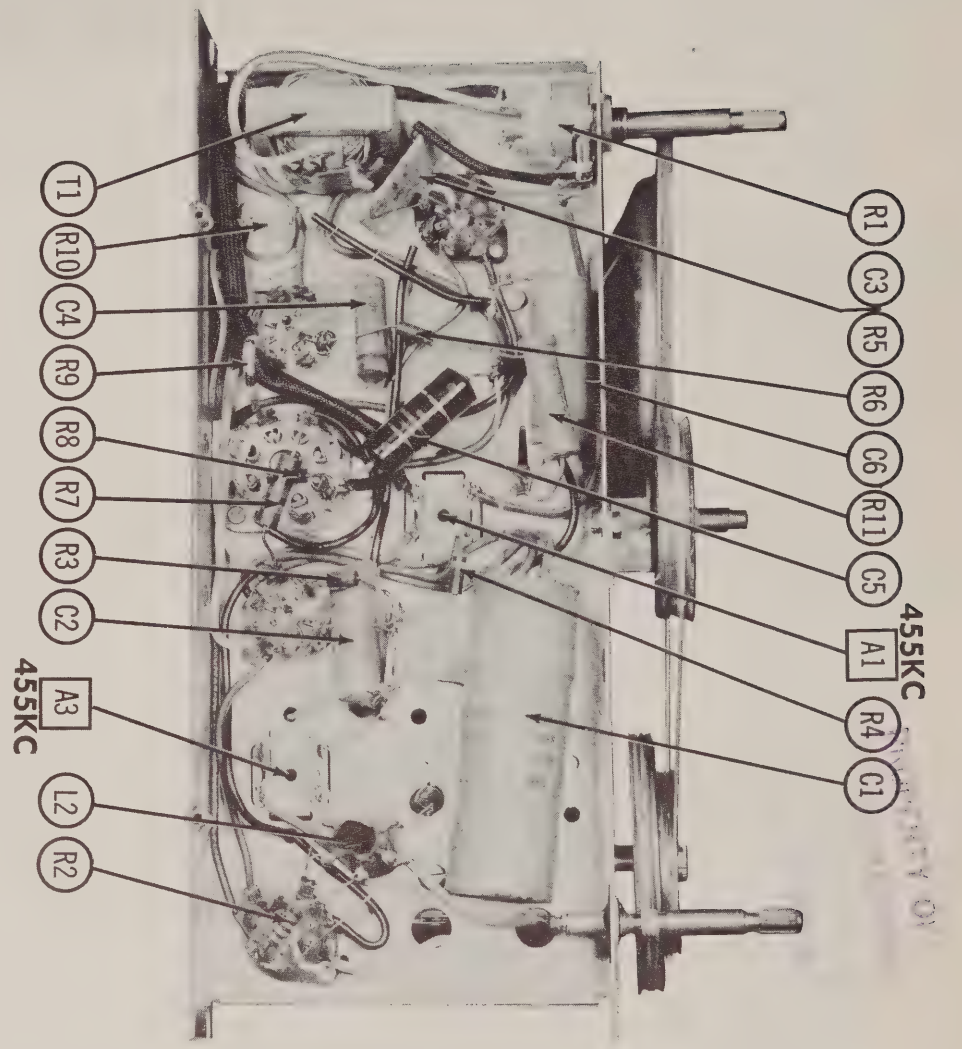
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Truetone PART No.	MILLER PART No.	
L1	Loop Antenna	3.1Ω		13E-19560		
L2	Osc. Coil	.8Ω	6Ω	13D-17583		
L3	Input IF	14.5Ω	14.5Ω	13B-17731	12-C1	
L4	Output IF	14.5Ω	14.5Ω	13B-17731	12-C2	

MISCELLANEOUS

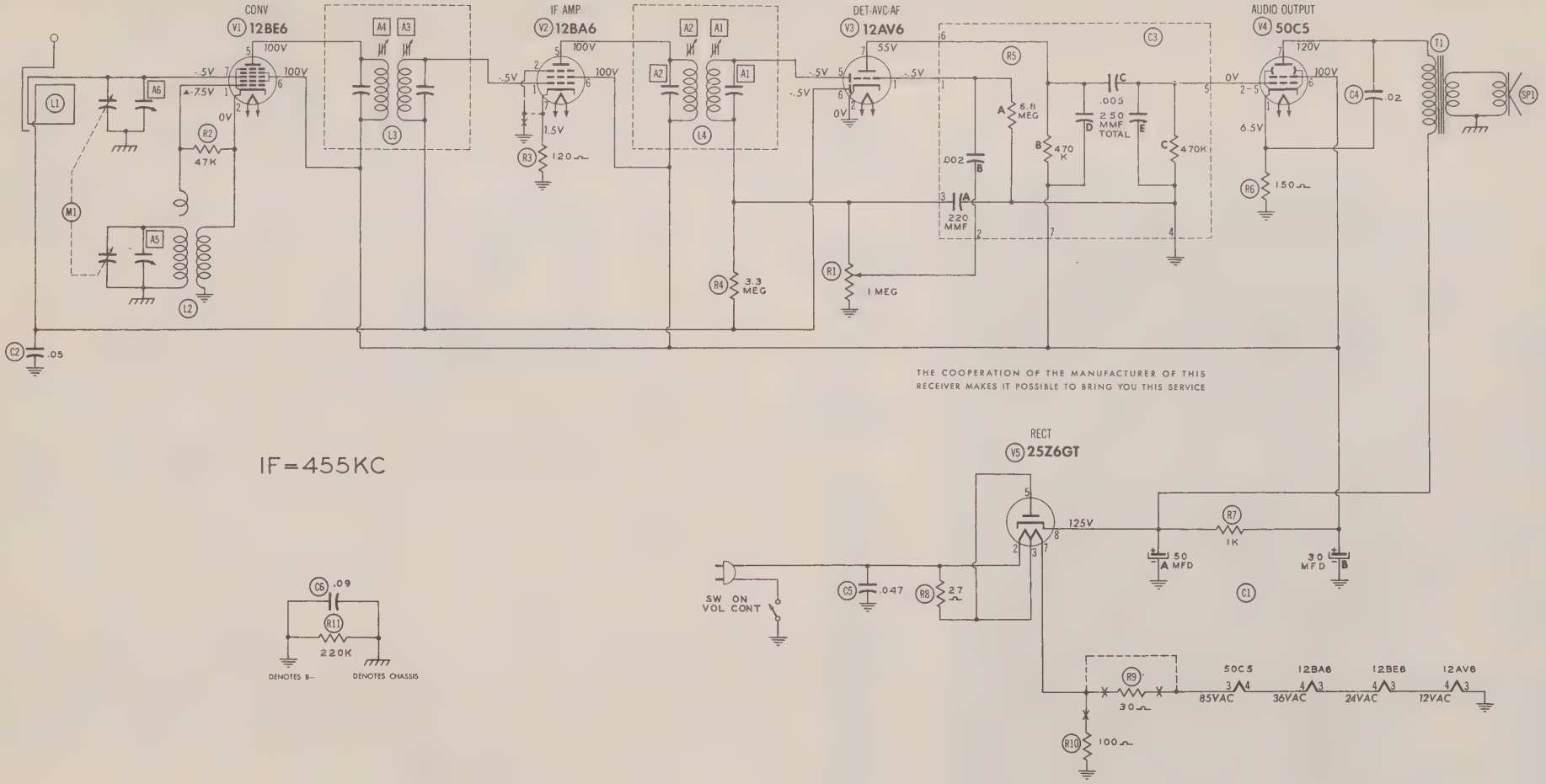
ITEM No.	PART NAME	Truetone PART No.	NOTES
M1	Tuning Capacitor	8A-19553	32-445MMF, 25-150MMF.
	Cabinet	5C-19530-65	Walnut (Model D-2102A, B)
	Cabinet	5C-19530-9	Ivory (Model D-2103A, B)
	Knob	5B-16164-37	Tuning - Off/On Volume Walnut (Model D-2102A, B)
	Knob	5B-18164-8	Tuning - Off/On Volume Ivory (Model D-2103A, B)



CHASSIS—BOTTOM VIEW



TRUETONE MODEL D-2102A



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BE6	47KΩ	.8Ω	12Ω	24Ω	† 1KΩ	† 1KΩ	4.3Meg	
V 2	12BA6	4.3Meg	0Ω	24Ω	36Ω	† 1KΩ	† 1KΩ	120Ω	
V 3	12AV6	6.8Meg	0Ω	0Ω	12Ω	1Meg	4.3Meg	† 470KΩ	
V 4	50C5	150Ω	470KΩ	86Ω	36Ω	470KΩ	† 1KΩ	† 165Ω	
V 5	25Z6GT	INF	130Ω	140Ω	† 0Ω	140Ω	INF	105Ω	500KΩ

† MEASURED FROM PIN 8 OF V5.
▲ TAKEN WITH VACUUM TUBE VOLTMETER.

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200-11

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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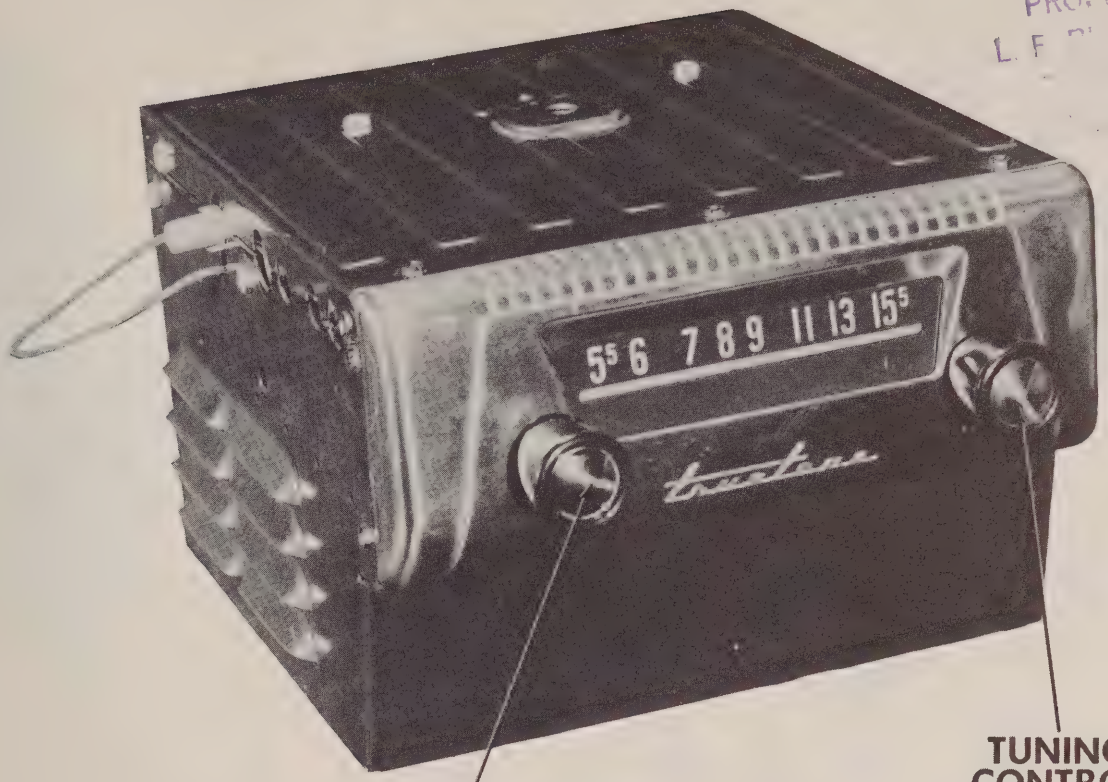
TRUETONE
MODELS D-4118, B



TRUETONE
MODELS D-4118, B

TRADE NAME	Truetone Model D-4118, B
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Battery Operated Universal Automobile Superheterodyne Receiver
TUBES (Four)	Types 6BE6 Conv., 6BA6 IF Amp., 6AV6 Det-AVC-AF Amp., 6AS5 Audio Output
POWER SUPPLY	6 Volt Storage Battery
RATING	4.1 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BA6 (V1). Low side to chassis.	455KC (400∿Mod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	50MMF	High side to antenna receptacle. Low side to chassis.	1620KC	"	"	A5	"
3.	"	"	1400KC	Tune for maximum signal.	"	A6	"
4.	"	"	600KC	600KC	"	A7	Adjust for maximum output whole rocking tuning gang. Repeat steps 3 & 4 for optimum results.

After receiver has been aligned, install in auto and fully extend the antenna. Tune in weak station near 1400KC and adjust A6 for maximum volume.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		TRUETONE PART No.	STANDARD REPLACEMENT		
V1	Converter	6BE6	6BE6	7CH	
V2	IF Amplifier	6BA6	6BA6	7BK	
V3	Det.-AVC AF Amp	6AV6	6AV6	7BT	
V4	Audio Output	6AS5	6AS5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	♦30	350	8C17939	AFH3-109		C083				
B	♦20	350								
C	40	25								
C2	220		8G-14459	SI220	D6-221	5W5T25	GP2K-221	UC-5322	5GA-T22	
C3	30		8G-18297		TCN-30		N750K-300			
C4	100		8G-13131	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C5	.047	200	8D-17951	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C6	.22	400	8D-18758	P488-22		PTE4P22		PT4025	4TM-P22	
C7	.01	400	8D-17948	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C8A	220									
B	.005									
C	.005		♦201-19303		♦PC-151		♦1408-02		♦103C5	
D	250									
E										
C9	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C10	.01	400	8D-17948	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C11	.008	1600	8B-17941	P1688-008		PTE16D8		PT1628	MB-D8	
C12	.5	100	8D-19810	P185-5		MP2P5		RF480	68P20	
C13	.5	100	8D-19810	P185-5		MP2P5		RF480	68P20	

♦ Items C8A, C8B, C8C, C8D, C8E, R8A, R8B and R8C are combined in one unit.
When replacing items separately, C8D and C8E should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	A-10A-19665	Q13-133X	AK-80	BT-66-S	UT-427	Volume - tapped @ 100KΩ
B	Shaft		Not Req.	Not Req.	RS-5	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

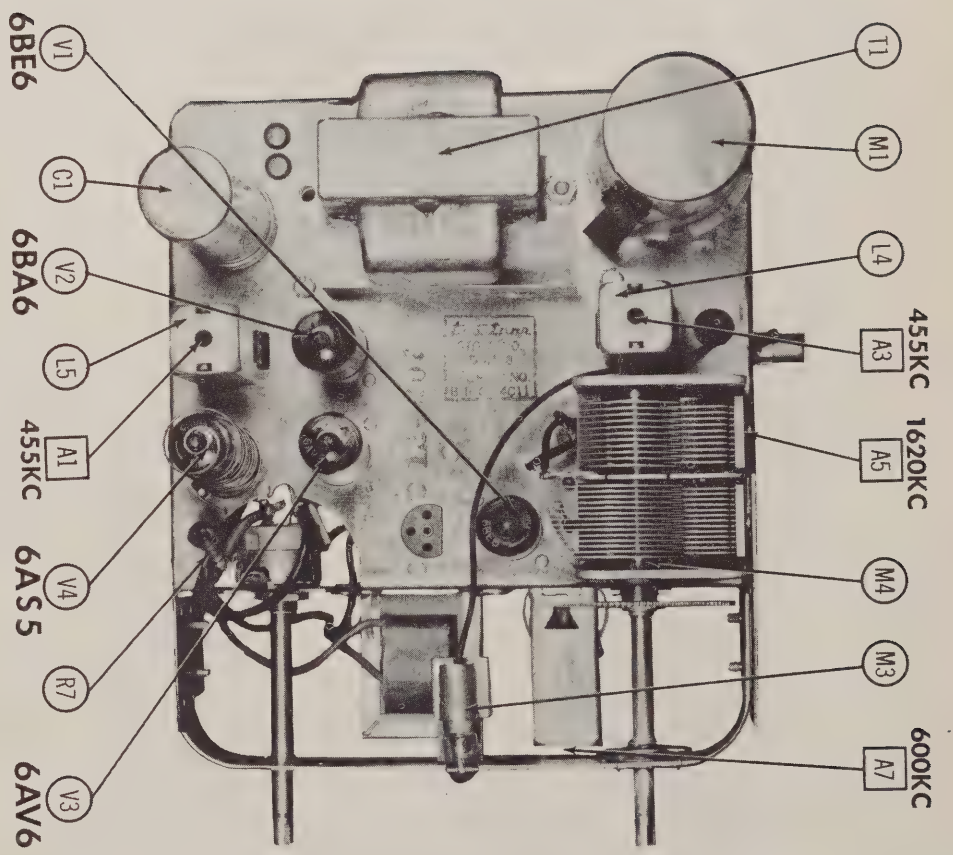
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R2	1.5Meg	½	9B1-32	BTS-1.5Meg	
R3	22KΩ	½	9B1-78	BTS-22K	
R4	27Ω	½	9B1-43		
R5	68Ω	½	9B1-48		
R6	1.5Meg	½	9B1-32	BTS-1.5Meg	
R7	22KΩ	½	9B1-78	BTS-22K	
R8A	6.8Meg	½		BTS-6.8Meg	
B	470KΩ	½	♦201-19303	BTS-470K	
C	470KΩ	½		BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R9	220Ω	½	9B1-54	BTS-220	
R10	1200Ω	2	9B4-63	BTB-1200	
R11	3300Ω	½			Note 1
R12	56Ω	½	9B1-47		
R13	56Ω	½	9B1-47		
R14	5.6Ω	5			Note 2

♦ Items R8A, R8B, R8C, C8A, C8B, C8C, C8D, C8E are combined in one unit.
Note 1. Some Models use a 2700Ω resistor in this application.
Note 2. Not used in all Models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	6.3VAC @2.4A	300VCT .058ADC			B12A-2001				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	4.7KΩ	3.3Ω	300Ω	.56Ω	B12C19728	A-3877 ①	A-2930 ①	RO-9 ①	S-6X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5 1/4"	PM	3.3Ω	B18A-19685	ST-803 Mod. P525V	52A1	

COILS (RF-IF)

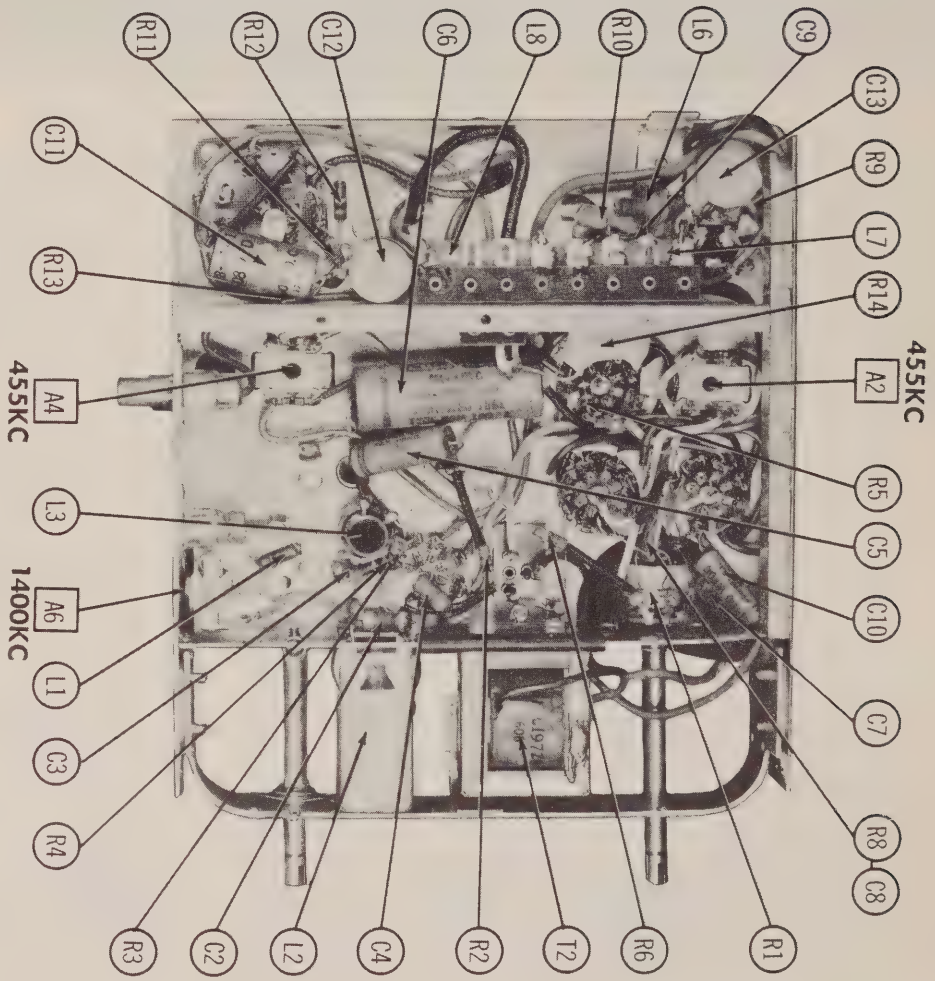
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	TRUETONE PART No.	MILLER PART No.	
L1	Ant. Loading Coil	.2Ω		16B-16023		58 Microhenries
L2	Ant. Coil	2.7Ω		13E-19697		
L3	Osc. Coil	.2Ω	6Ω	13D-19698	70-OSC *	
L4	Input IF	16Ω	16Ω	13B-17731	12-C1	
L5	Output IF	16Ω	16Ω	13B-17731	12-C2	
L6	RF Choke	11Ω		201-16379		640 Microhenries
L7	Fil. Line Choke	0Ω		16M-19921	5221	
L8	Hash Choke	0Ω		16M-19921	5221	

* Do not use top of secondary winding.

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA				NOTES
				TRUETONE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Sync	6.3V	115	21A17919	5406	525	5406	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

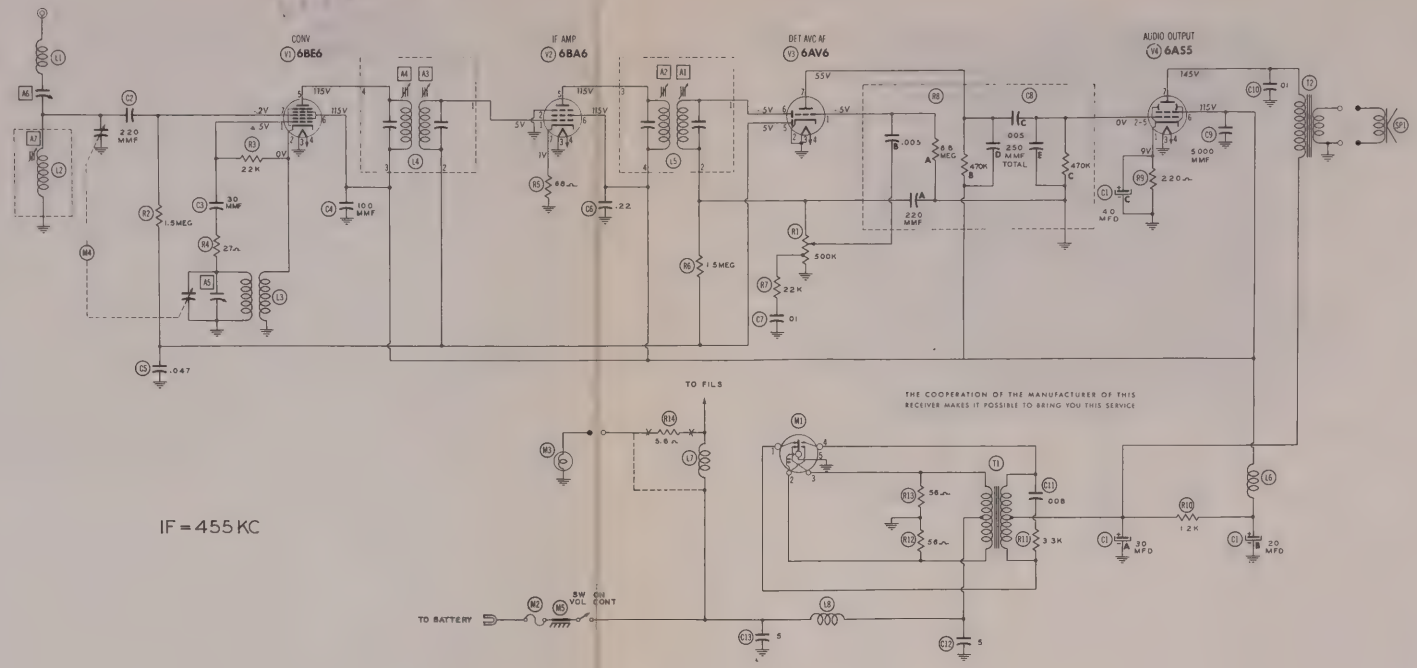
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			TRUETONE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A 32V	46B-17993	14A-17975	307014 (SFE-14A)	157014	SFE14	HD1

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					TRUETONE PART No.		
M3	Bayonet	6-8	.25	Blue	46A-11739		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M4	Tuning Capacitor	8A-19645	16-430MMF, 30-160MMF
M5	Spark Plate	2C-19681	Part of top cover
A6	Trimmer	8E-19695	Ant. Adj.
	Top Case	2B-19679	
	Bottom Case	2B-19683	
	Knob	5B-19803	Tuning and Off/On Volume
	Dial Scale	6D-19687	
	Escutcheon		



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BE6	22KΩ	.2Ω	0Ω	.5Ω	†1.2KΩ	†1.2KΩ	3.5Meg
V 2	6BA6	2 Meg	0Ω	0Ω	.5Ω	†1.2KΩ	†1.2KΩ	68Ω
V 3	6AV6	6.8Meg	0Ω	0Ω	.5Ω	2 Meg	500KΩ	†470KΩ
V 4	6AS5	220Ω	470KΩ	0Ω	.5Ω	470KΩ	†1.2KΩ	†311Ω

† MEASURED FROM SEC. CENTER TAP OF T1
▲ TAKEN WITH VACUUM TUBE VOLTMETER.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom view.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

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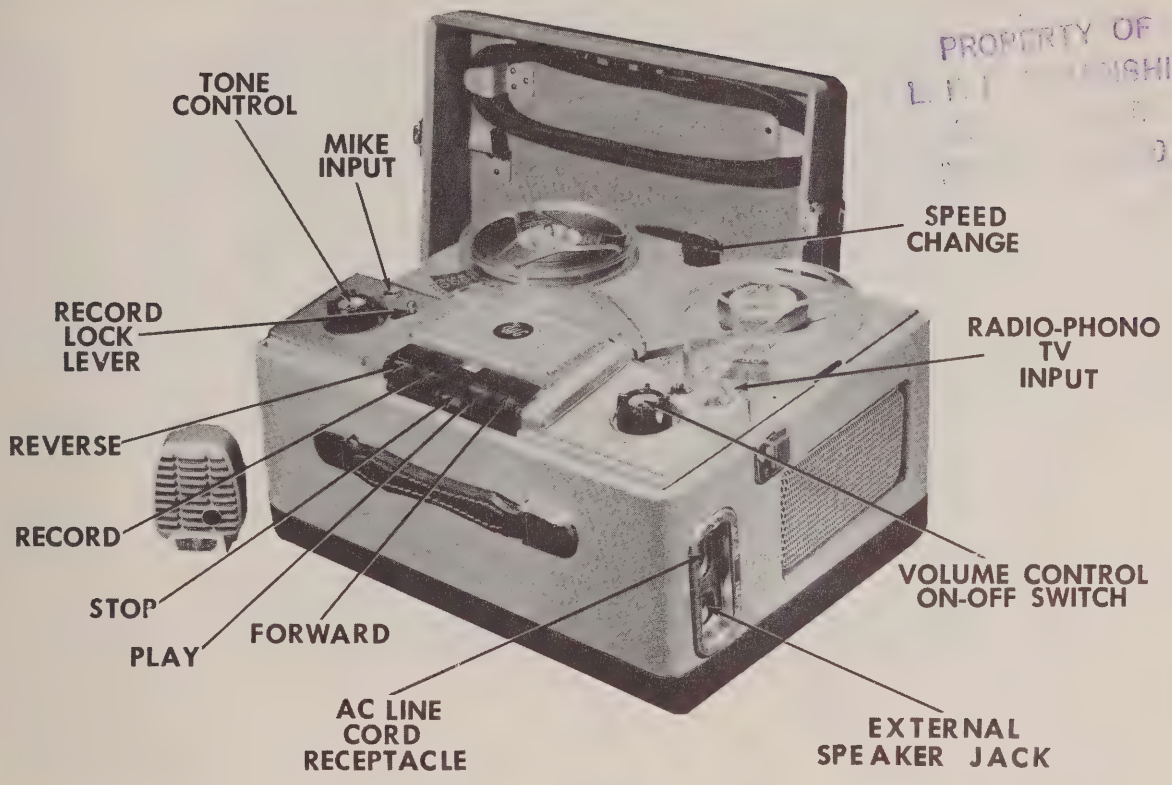

Figure 1.

GENERAL INFORMATION

The 3A Series Wilcox-Gay "Recordio" features fingertip operation for Fast Forward, Playback, Stop, Record and Fast Reverse. The "Recordio" is designed to record and play back two tracks of material on standard width recording tape, which doubles the playing time of a standard 5" or 7" reel of tape with no loss of frequency response or quality. Recordings can be made from a radio, television receiver or phonograph, in addition to those made directly from the microphone. Recordings can be played back through the self-contained speaker or an external speaker through use of the Auxiliary Speaker Jack.

The models in the 3A Series have two different tape speeds, Model 3A10 having 7-1/2" and 3-3/4" per second, and Model 3A11 having 3-3/4" and 1-7/8" per second.

SIZE	SPEED 1-7/8	SPEED 3-3/4	SPEED 7-1/2
5" reel	2 hours	1 hour	1/2 hour
7" reel	4 hours	2 hours	1 hour

The 3A Series is designed to operate on 60 cycle, 115 volt, AC supply.

CAUTION: Severe Damage Will Result if Connection is Made to a Direct Current (DC) Line.

Manufactured by:

Wilcox-Gay Corporation
Brooklyn, New York Charlotte, Michigan

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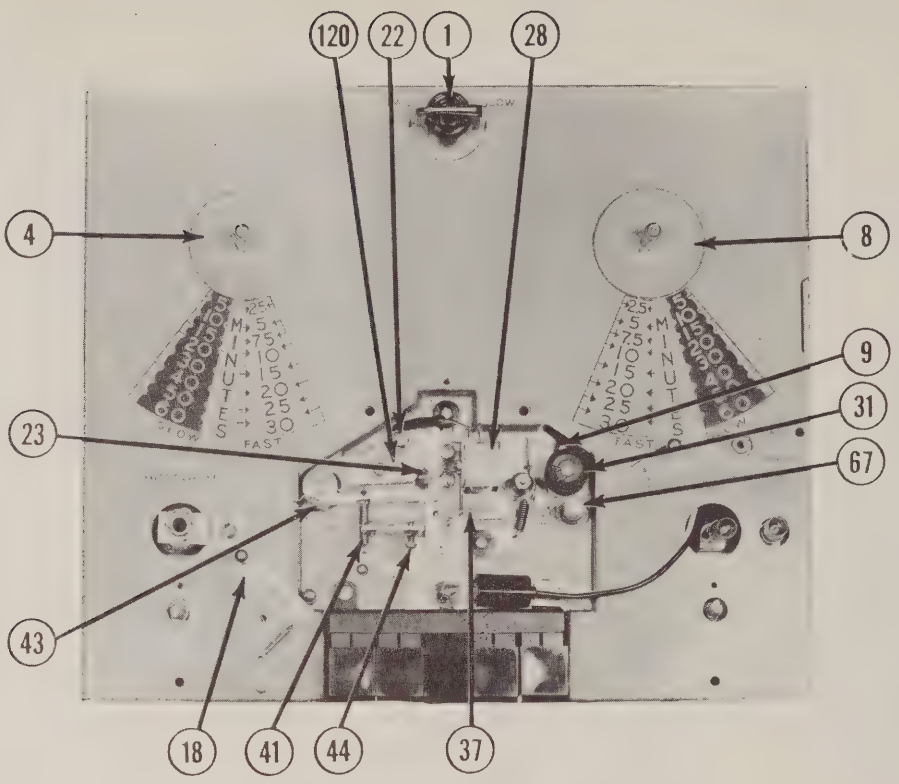

Figure 2.

OPERATING INSTRUCTIONS

1. With the "Stop" button depressed, insert the AC power cord into the receptacle at the right side of the cabinet (Figure 1).

2. Plug the AC cord into a convenient wall receptacle of the proper rating.

Threading the Tape -

1. Place a reel of tape on the left spindle (4) and an empty reel on the right spindle (8) making sure the reel slots engage the reel pin on the spindles.

2. Unwind about 14" of the tape from the reel. Hold a section of the tape straight with both hands and insert the tape in the tape slot making sure the dull coated side of the tape faces the rear of the recorder.

NOTE: This recorder uses Type "A" wound tape, i.e. the dull magnetic coated side faces inward on the reel. If the tape to be used is Type "B" (coated side facing outward) place the reel on the left spindle so that the tape will lead-off in a clockwise direction. Bring the tape behind the rear cover (5) (not through the head slot) and thread it on to the right reel in the normal manner. Press the "Forward" button and allow the full reel of tape to wind on the empty reel. The dull side of the tape will now be facing inward on the reel.

3. Insert the free end of the tape through the hub of the right take-up reel and place a pencil firmly over the tape, forcing it into one of the three radial slots on the hub of the empty reel. Turn the reel several turns with the pencil in this position until the tape is secured to the reel and all slack is taken up between the reels.

To Record From Microphone -

1. Turn the On-Off Volume Control to the right until a click is heard and allow about thirty seconds for the unit to warm up. The pilot light located above the "Stop" button will glow when the unit is turned on.

2. Insert the microphone plug into the "Microphone Input Jack".

3. Turn the speed control knob (1) to the desired speed.

NOTE: Recordings made at a certain speed must be played back at that speed.

4. Move record lock lever (18) downward with the left hand. This releases the record safety lock which prevents accidental erasure.

5. Depress the "Record" button with the right hand (while holding the record lock lever (18) with the left hand) until it latches.

6. While talking into the microphone, adjust the "Volume" control until the "Normal" indicator flashes and no flashing occurs at the "Overload" indicator.

NOTE: Correct recording volume is very important. Too weak a signal, which does not cause the "Normal" indicator to flash, will result in weak playback and high background noise.

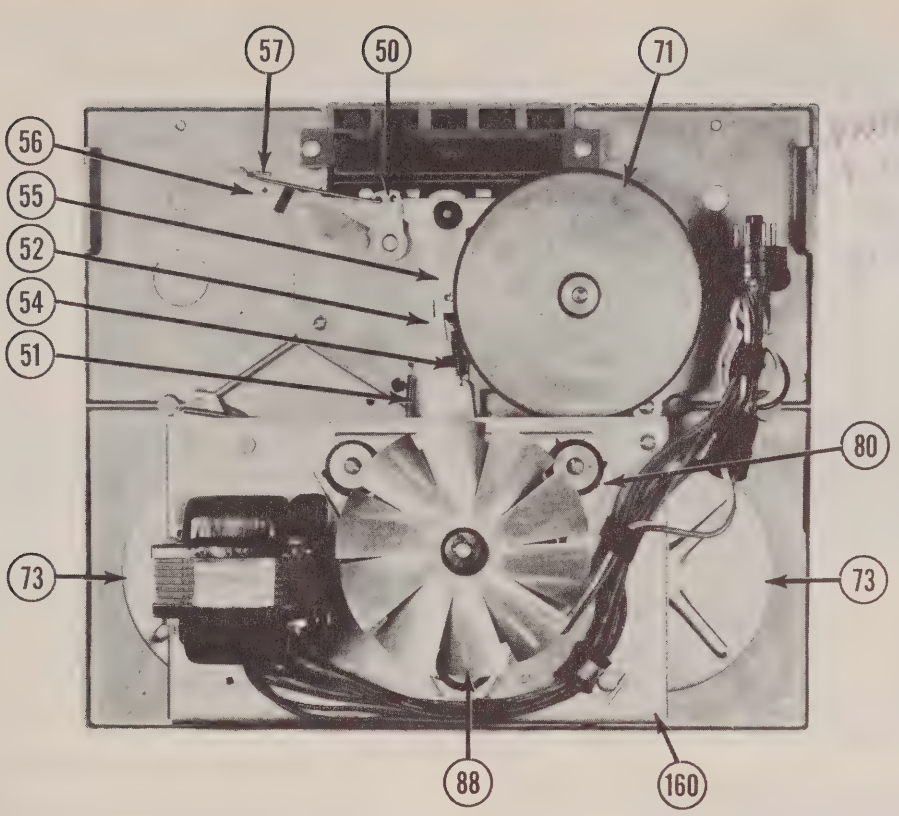

Figure 3.

Too strong a signal, causing the "Overload" indicator to flash, will result in distortion during playback.

To Record From External Radio -

Recordings can be made from a radio by placing the microphone near the loudspeaker of the radio; however, this type of recording may not be satisfactory as other sounds may be picked up by the microphone which as a result will be recorded on the tape. A superior quality recording can be made by use of radio-phono attachment cord (Part No. C-20.233). Connect attachment cord as follows:

1. Connect the cord clips across the voice coil terminals on the radio speaker as shown in Figure 4.

2. Insert the cord plug into the "Radio, TV, Phono Jack".

3. Proceed as described in "To Record From Microphone".

NOTE: Remove attachment cord after recording is completed.

To Record From Phonograph -

1. Connect the cord clips of the attachment cord to the pickup leads on the external phonograph.

2. Insert the attachment cord plug into the "Radio, TV, Phono Jack".

3. Proceed as described in "To Record From Microphone".

NOTE: Should a hum develope from the above connection, reverse the cord clips on the pick-up leads.

To Record From Television Receiver -

1. Connect attachment cord as described in "To Record From External Radio" and proceed with recording as described in "To Record From Microphone".

NOTE: The "Recordio" Tone Control does not operate during recording. When recording from radio or a television receiver set the radio or television tone control for maximum treble.

Dual Track Recording -

The Recordio is designed so that 1/2 the tape width is recorded at a time; thereby resulting in two track recording. This two track operation is accomplished in the following manner:

1. After a reel of tape has been recorded, i.e. all of the tape wound on to the take-up reel, depress the "Stop" push button. This stops all movement of the tape.

2. Remove the reels from the recorder, turning the full reel over and placing it on the left spindle and the empty reel on the right spindle.

3. Properly thread the tape and proceed with the recording as in "To Record From Microphone".

Figure 4.

4. After this track has been recorded the first track of recording is ready to be played without rewinding.

(a) Place the full reel of tape on the feed reel (left) spindle and the empty reel on the take-up (right) spindle.

(b) Thread the tape making sure the dull side of the tape faces the record head.

(c) Set the controls as described under "To Play a Recording".

To Play a Recording -

1. Thread the tape as described under "Threading the Tape".

2. Turn the On-Off Volume control on and allow thirty seconds for the tubes to warm up.

3. Depress the "Play" button until it is latched into position.

4. Adjust the Volume and Tone control to suit.

To Use an External Speaker -

Any size speaker of the permanent magnet type, having a 3 ohm voice coil, may be used by connecting a speaker extension cord acorss the voice coil of the speaker and then inserting the extension plug (same type as micorphone plug) into the External Speaker Jack located on the right side of the cabinet. This automatically cuts out the self-contained speaker.

To Edit and Splice Tape -

NOTE: Since it is impossible to edit and splice one track without affecting the other, recordings which are to be edited should be limited to one track only.

1. The tape may be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements may be inserted between selections, etc. Unused sections of tape can be spliced together for re-use.

2. For best results, cut tape at a slight diagonal, join ends together with splicing tape on the glossy side and trim off any excessive width.

Fast Forward and Fast Rewind -

High-speed forward or reverse wind can be obtained by pressing the desired button. These are used primarily in locating a desired portion of a recording in a few seconds.

CAUTION: The "Stop" button should always be depressed before changing functions or speeds. Always depress the "Stop" button when the Recordio is not in use.

Erasing Recorded Material -

Erasing of recorded material takes place automatically when new material is recorded; therefore, no special step is necessary to erase recordings before new recordings are made. However, if a portion of a recording or an entire reel of tape is to be completely erased, do so as follows:

1. Properly thread the tape on the machine.

2. Turn the Volume control knob clockwise until a click is heard. This turns the recorder on.

3. Press down on the Record button until it latches into position. The erasing of recorded material is now in process and may be stopped at any time by depressing the "Stop" button.

NOTE: Only one track of recorded material is erased at a time. To erase the second track, reverse the reels and repeat the above operation.

To Use Recorder as a Public Address System -

The recorder may be used for public address with or without recording the material at the same time. Plug in an external speaker as described in "To Use an External Speaker". Turn the recorder on and depress the Record button, but do not use tape. Be careful to maintain sufficient distance between the microphone and the external speaker to prevent feedback howl. If it is desired to record the program, thread the tape as previsouly described before depressing the Record button.

ADJUSTMENTS

Disassembly Instructions -

1. Remove two Phillips head screws from rear of case.

2. Remove push-on type volume and tone control knobs.

3. Remove two screws located under volume and tone control knobs. Remove escutcheon.

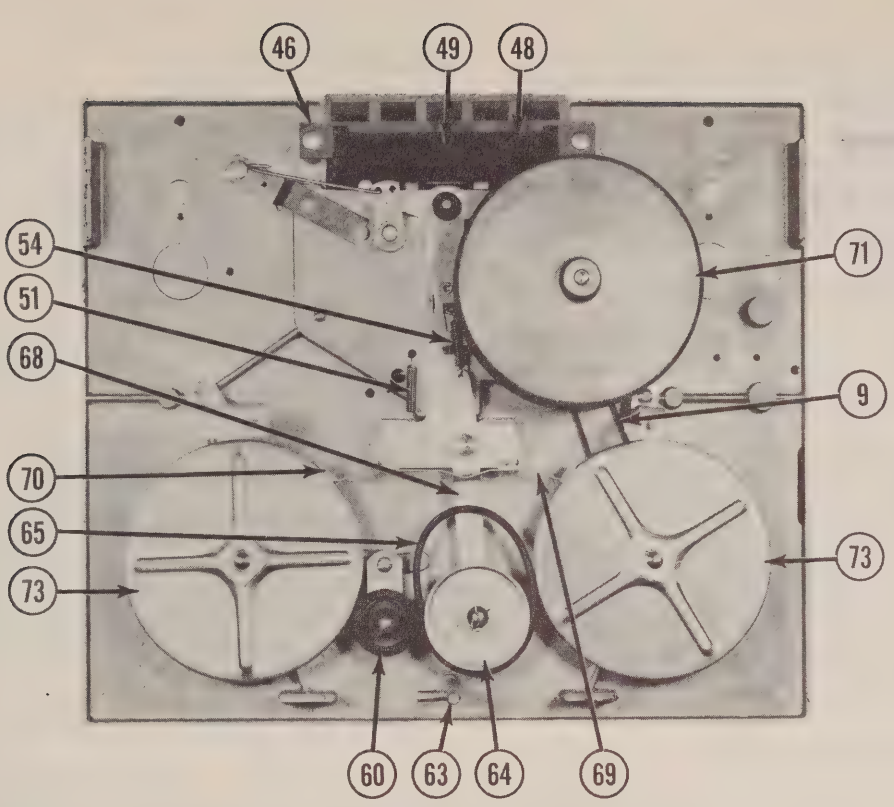

Figure 5.

4. Remove two hex head screws located under escutcheon.

5. Lift unit out of case, removing leads from speaker before removing unit completely.

Record-Play Head Adjustment (See Exploded View) -

To adjust the record-play head (28) for maximum frequency response, make the following adjustment:

1. Remove the rear cover escutcheon (5).

2. Properly thread an alignment tape or a good recorded tape on the machine.

3. Set the controls as described under "To Play a Recording".

Grip the vertical portion of the record head mounting bracket with a pair of long-nosed pliers. Rock the mounting bracket and record head from side to side slightly until the maximum high frequencies are obtained. Bend the bracket with the pliers to obtain a permanent set at this position.

4. Replace the rear cover excutcheon (5).

Pressure Pad Adjustment (See Exploded View) -

1. Remove the front and rear escutcheons (5 and 11).

2. Depress the "Play" button. Do not turn the recorder on.

3. Use a pencil type postal scale and check the amount of pressure necessary to just pull the pad away from the tape. The test should be made on the end of the pressure pad mounting spring (37). Adjust the pressure pad for 1-3/4 oz. $\pm$ 1/4 oz. pressure.

(a) The record-head pressure pad is adjusted by the locked adjustment screw (44).

(b) The guide post pressure pad (43) is adjusted by bending the pressure pad spring. It must be adjusted for minimum pressure against the tape.

4. After the adjustments are made depress the "Stop" button and replace the trim covers.

Erase Head Adjustment -

1. With tape properly threaded, turn recorder on and depress the Record button. Allow tape to run for a few seconds then turn recorder off, but leave Record button depressed.

2. With the trim covers removed check the erase head (120), see Figure 2, to see if it is parallel with the tape, if not loosen screw (22) just enough so the head can be pivoted and align it with the tape then tighten the screw.

CAUTION: Make sure the head retracting spring (24), see Figure 6, remains in front of the erase head while adjusting it.

3. Check to see if the top edge of the tape coincides with the top end of the diagonal slot in the erase head (junction of long diagonal slot and short vertical slot). To adjust level of tape, loosen lock nut (20), see Figure 6, and rotate tape guide post (21) to move tape up or down. Tighten lock nut (20).

4. After this adjustment has been made, check to see if the tape moves forward approximately 1/64" when the "Record" button is depressed, if not, loosen the forward adjustment screw (23) and turn the screw in or out as required to obtain this 1/64" adjustment. Tighten the lock nut.

5. Replace the trim covers.

Brake Shoe Adjustment - (See Figure 5)

1. In order to adjust the brake shoes, the complete mechanism must be removed from the carrying case and the speaker disconnected.

2. With all push buttons in the up position the brake shoes (70) should clear the drums by approximately 1/8".

3. Depress the "Stop" pushbutton while observing the brake shoes. Both brake shoes must contact the drums at the same time and with equal pressure.

4. The adjustment is accomplished by bending the spring arm (69).

Adjustment for Slow Take-Up Reel -

There are some instances where the spring drive belt (9), see Figure 5, stretches after a period of time. In this case, the belt should be removed and shortened.

1. Clip off 3 to 5 turns of the spring belt.

NOTE: The spring belt is made so that one end will twist into the tip of the other end; therefore, clip the turns off the large end of the belt.

2. Twist the ends together and replace the belt.

Bias Adjustment -

Turn the recorder on and depress the "Record" button; use no tape. To determine if the bias is within satisfactory limits without dismantling the unit, merely connect a VTVM from the top lug of the recording head to the chassis. If 55 to 85 volts are present in the 3A11, or if 75 to 100 volts are present in the 3A10, no adjustment is necessary.

If the readings are outside of this range, proceed as follows:

1. Try a new 5879, 12AX7, 6AQ5 and 6X4.

2. If still not within range, remove the chassis shield and connect a low capacity VTVM from Pin 1 of the 6AQ5 to the chassis and adjust trimmer M4 (see Figure 8) to obtain a reading of 1.8 volts in the 3A11, or a reading of 2.25 volts in the 3A10. This provides the optimum in performance.

TROUBLES

Push Buttons Fail to Latch into Position -

1. Lock plate spring (49) loose or broken, resulting in the lock plate not being held against the hinge bracket (46). See Figure 5.

Fails to Erase -

1. Spring (41) loose or broken, resulting in the erase head (120) not being pulled forward to engage the tape. See Figure 2.

2. Erase head not aligned properly. See "Erase Head Adjustment".

No Fast Forward or Reverse (See Figure 5) -

1. Idler lever tension spring (54) may be loose or broken; if so, the idler lever (68) will not be actuated. Replace spring (54).

2. Check idler drive belt (65), see Figure 6, to see if it is properly connected.

No Drive on Record or Playback (See Exploded View) -

1. Idler tension spring (98 or 99) loose or broken, thereby not holding idler wheel (76) in engagement with motor pulley (101) and flywheel (71).

2. Idler slide plate (97) binding on the slide bushing (96), thus preventing the idler from moving forward.

Tape Fails to Wind on Reel During Record or Playback -

1. Reel drive spring (9) loose or broken. See Figure 5.

Speed Variation or "Wow" (See Exploded View) -

1. Check capstan (67), pinch roller (31), idler (76), motor pulley (101), and flywheel (71) for oil or foreign material. Clean these parts with a good cleaning fluid.

2. Check motor pulley (101) to see if it is secured to motor.

3. Check idler tension spring (98 or 99); see if it is holding the idler engaged with motor pulley and flywheel.

4. Idler slide plate (97) binding on the slide bushing (96), preventing idler wheel (76) from making positive contact with motor pulley and flywheel.

Tape Overruns or Spills When Stop Button Is Depressed During Fast Forward or Rewind -

1. Brake shoes out of adjustment. See "Brake Shoe Adjustment".

2. Brake pads worn out. Replace pads.

Failure to Record -

1. Tape pressure pad not adjusted properly, resulting in the tape not being held against the recording head. See "Pressure Pad Adjustment".

2. Record head loose on its mounting. Adjust head and tighten into position as described under "Record-Play Head Adjustment".

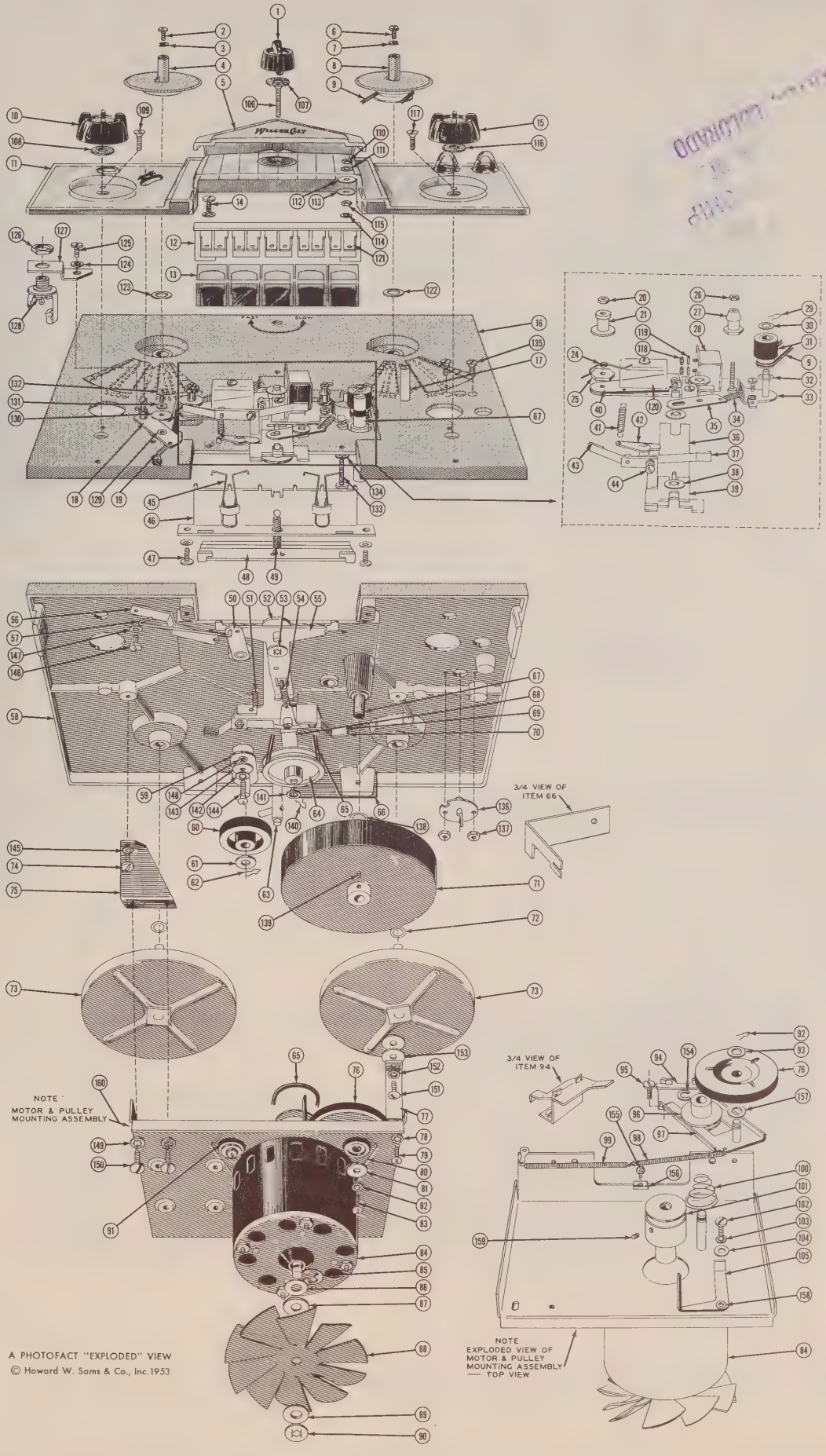
3/4 VIEW OF ITEM 66
3/4 VIEW OF ITEM 94
NOTE
MOTOR & PULLEY MOUNTING ASSEMBLY
NOTE
EXPLODED VIEW OF MOTOR & PULLEY MOUNTING ASSEMBLY — TOP VIEW
A PHOTOFACT "EXPLODED" VIEW
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Figure 6.

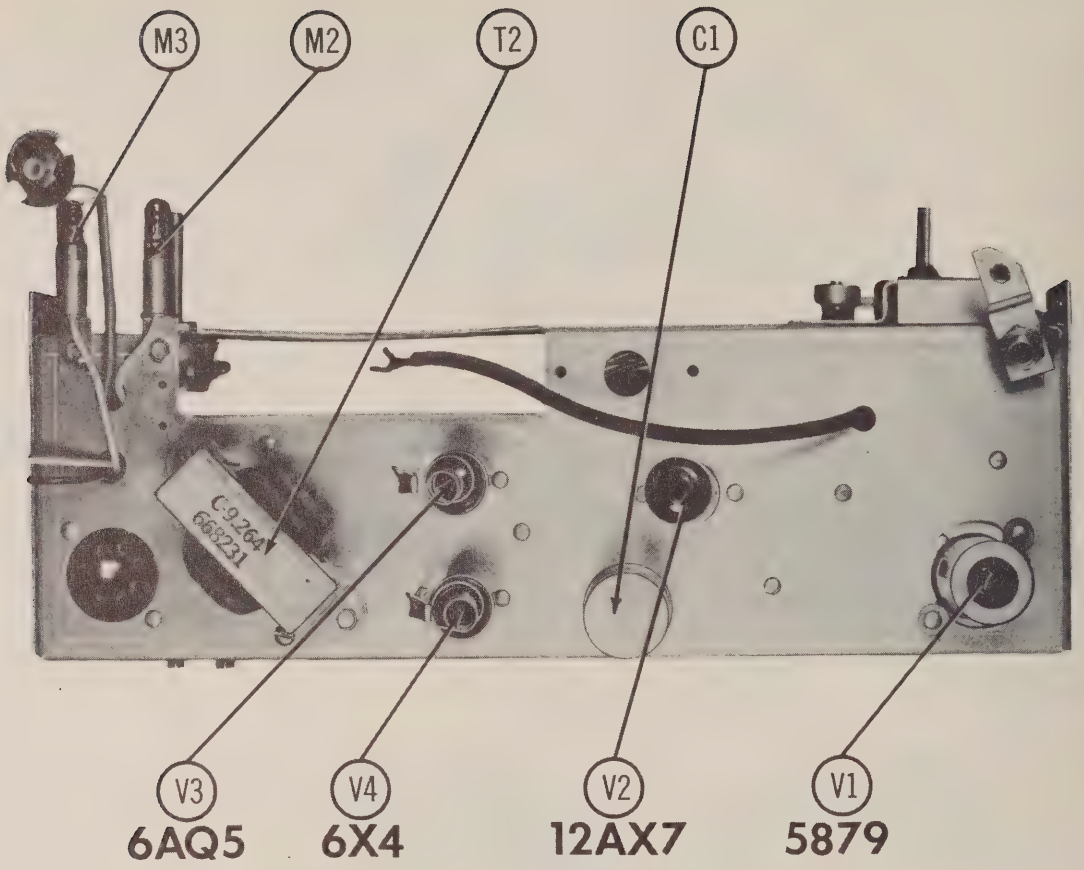


Figure 7.

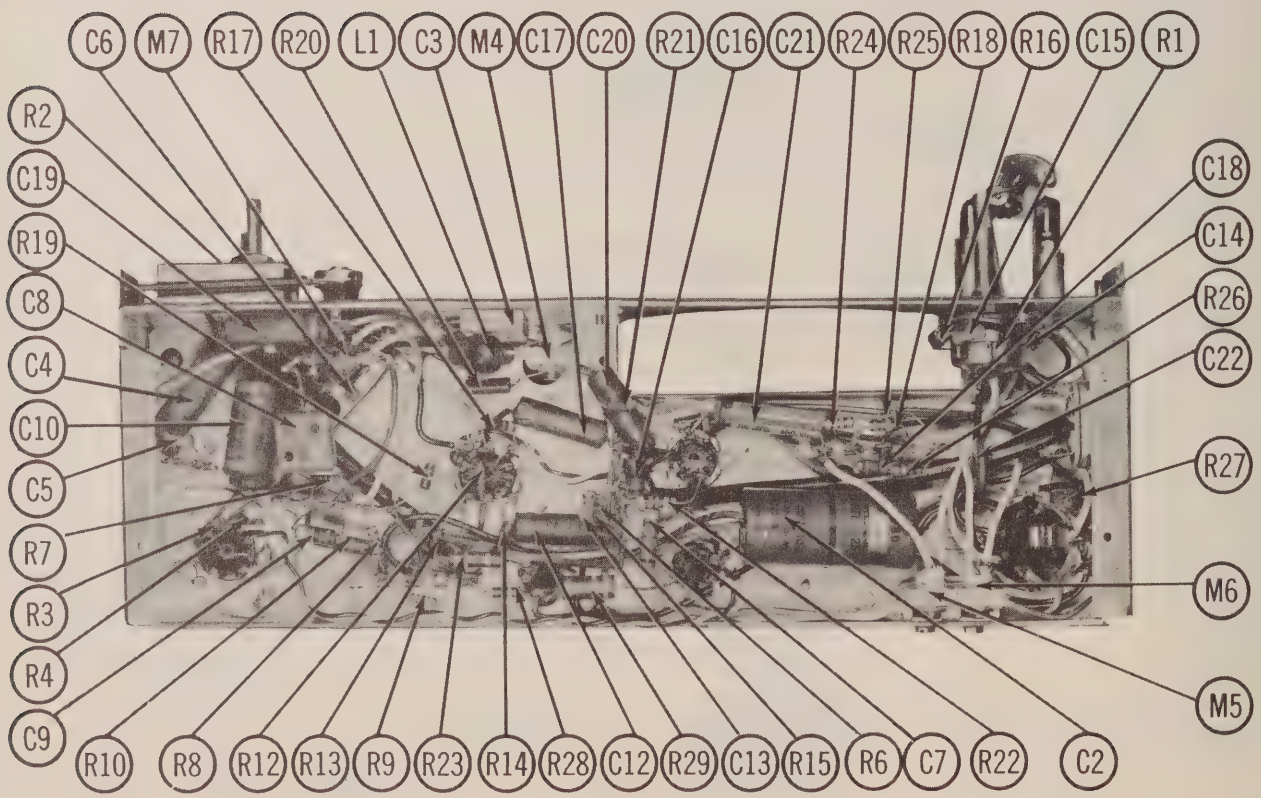
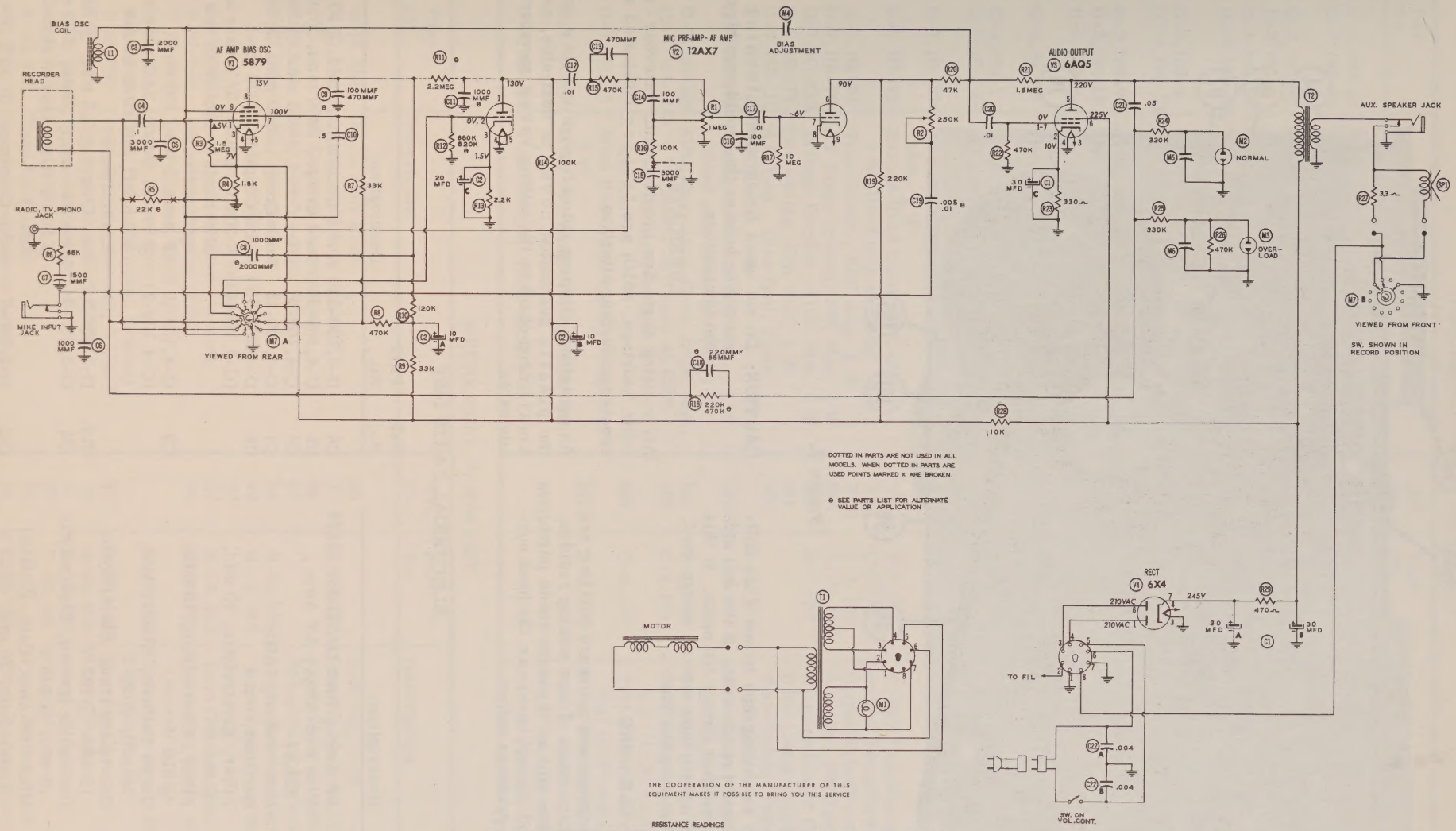


Figure 8.



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	5879	∞ 5Meg	0Ω	1. 8KΩ	. 2Ω	0Ω	0Ω	† 43KΩ	† 143KΩ	48Ω
V 2	12AX7	† 110KΩ	0Ω	2. 2KΩ	0Ω	0Ω	† 200KΩ	10Meg	0Ω	. 2Ω
V 3	6AQ5	470KΩ	330Ω	. 2Ω	0Ω	† 750Ω	† 470KΩ	470KΩ		
V 4	6X4	100Ω	INF	0Ω	. 2Ω	INF	110Ω	400KΩ		

ALL MEASUREMENTS TAKEN IN "RECORD" POSITION.
† MEASURED FROM PIN 7 OF V4.
▲ TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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200-13

WILCOX-GAY
MODELS 3A10, 3A11

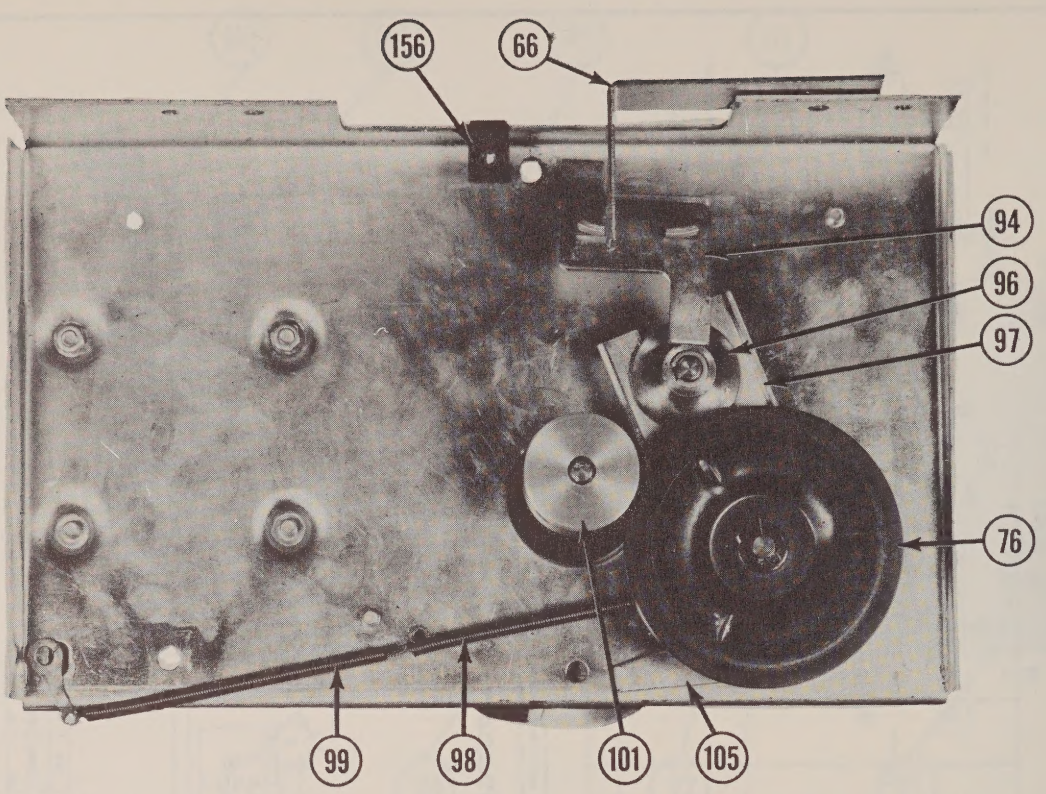

Figure 9.

3. Check the recording tape to see if the dull-coated side faces inward on the reel. If the dull side faces outward, a recording cannot be made. If this condition exists, wind the tape onto an empty reel, as described in "Threading the Tape".

CLEANING

The record head, capstan and pressure roller are subject to an accumulation of tape coating residue, which is worn off the tape as it passes these parts. Use a soft cloth and alcohol to clean the head surfaces, capstan and pressure roller.

CAUTION: Do not use a brush when cleaning the recording head as this could possibly mar the laminations.

LUBRICATION

All rotating parts are provided with generous-size oilite bearings, which are factory lubricated and require no further attention.

An occasional cleaning out of foreign matter under the plastic pushbutton cover is desirable, and a small drop of oil on the sliding lever members is advisable.

ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
V1		AF Amp., Bias Oscillator, 5879
V2		Mike Pre-Amp., AF Amp., 12AX7
V3		Audio Output, 6AQ5
V4		Rectifier, 6 x 4
C1A	B-5.437	Filter, Electrolytic, 30 mfd. @ 250 V
C1B		Filter, Electrolytic, 30 mfd. @ 250 V
C1C		Output Cathode, Electrolytic, 30 mfd. @ 25 V
C2A	B-5.438	Decoupling (red), Electrolytic, 10 mfd. @ 200 V
C2B		Decoupling (green), Electrolytic, 10 mfd. @ 200 V
C2C		Mike Pre-Amp. Cath. (yellow) Electrolytic, 20 mfd. @ 25 V
C3	D-4.105-56	Fixed-Trimmer, 2000 mmf.
C4	D-3.100-22	Audio Coupling, .1 mfd. @ 200 V
C5	C-4.109-25	Tone Comp., 3000 mmf. @ 500 V
C6	C-4.109-9	Tone Comp., 1000 mmf. @ 500 V
C7	C-4.109-13	Tone Comp., 1500 mmf. @ 500 V
C8	D-4.105-56 (C-4.109-9)	Audio Coupling, 2000 mmf. @ 500 V. (Model 3All uses a 1000 mmf. capacitor in this application.)
C9	C-4.109-10 (C-4.109-2)	AF Amp. Plate, 100 mmf. @ 500 V. (Model 3All uses a 470 mmf. capacitor in this application.)
C10	D-3.100-34	Osc. Coupling, .5 mfd. @ 200 V
C11	D-3.100-34	Mike Pre-Amp. Plate, 1000 mmf. @ 500 V (Used only in Model 3All.)
C12	D-3.100-7	Audio Coupling, .01 mfd. @ 400 V
C13	C-4.109-2	Tone Comp., 470 mmf. @ 500 V

ELECTRICAL PARTS LIST (Cont.)

Ref. No.	Part No.	Description
C14	C-4.109-10	Tone Comp., 100 mmf. @ 500 V
C15	C-4.109-25	Tone Comp., 3000 mmf. @ 500 V (Used only in Model 3A10.)
C16	C-4.109-10	Tone Comp., 100 mmf. @ 500 V
C17	D-3.100-7	Audio Coupling, .01 mfd. @ 400 V
C18	C-4.109-27 (C-4.109-26)	Tone Comp., 220 mmf. @ 500 V (Model 3All uses a 68 mmf. capacitor in this application.)
C19	D-3.100-4 (D-3.100-7)	Tone Comp., 5000 mmf. @ 600 V (Model 3All uses a .01 mfd. capacitor in this application.)
C20	D-3.100-7	Audio Coupling, .01 mfd. @ 400 V
C21	D-3.100-19	Audio Coupling, .05 mfd. @ 400 V
C22A	B-4.131	Line Filter, 4000 mmf. @ 400 V
C22B		Line Filter, 4000 mmf. @ 400 V
R1	C-8.227-2	Volume Control, On/Off Switch, 1 Meg.
R2	C-8.231-1	Tone Control, 250K ohm, ½ W
R3	D-7.101-148	AF Amp. Bias Osc. Grid, 1.5 Meg., ½ W
R4	D-7.101-254	AF Amp. Bias Osc. Cath., 1.8K ohm, ½ W
R5	D-7.101-72	Record Head Load, 22K ohm, ½ W (Used only in Model 3All.)
R6	D-7.101-93	Tone Comp., 68K ohm, ½ W
R7	D-7.101-79	AF Amp. Screen, 33K ohm, ½ W
R8	D-7.101-128	Voltage Divider, 470K ohm, ½ W
R9	D-7.101-79	Decoupling, 33K ohm, ½ W
R10	D-7.102-112	AF Amp., Bias Osc. Plate, 120K ohm, 1 W
R11	D-7.101-155	Voltage Divider, 2.2 Meg., ½ W (Used only in Model 3All.)
R12	D-7.101-134 (D-7.101-138)	Mike Pre-Amp. Grid, 680K ohm, ½ W (Model 3All uses an 820K ohm resistor in this application.)
R13	D-7.101-30	Mike Pre-Amp. Cath., 2.2K ohm ½ W
R14	D-7.101-100	Mike Pre-Amp. Plate, 100K ohm ½ W
R15	D-7.101-128	Tone Comp., 470K ohm, ½ W
R16	D-7.101-100	Tone Comp., 100K ohm, ½ W
R17	D-7.101-192	AF Amp. Grid, 10 Meg., ½ W
R18	D-7.101-114 (D-7.101-128)	Record Head Network, 220K ohm, ½ W (Model 3All uses a 470K ohm resistor in this application)
R19	D-7.101-114	AF Amp. Plate, 220K ohm, ½ W
R20	D-7.101-86	Bias Filter Network, 47K ohm, ½ W
R21	D-7.101-148	Feedback Network, 1.5 Meg. ½ W
R22	D-7.101-128	Output Grid, 470K ohm, ½ W
R23	D-7.101-2	Output Cath., 330 ohm, 1 W
R24	D-7.101-121	Indicator Network, 330K ohm, ½ W
R25	D-7.101-121	Indicator Network, 330K ohm, ½ W
R26	D-7.101-128	Indicator Network 470K ohm, ½ W
R27	C-6.212-1	Recording Load 3.3 ohm 1W, W.W.
R28	D-7.101-58	Decoupling, 10K ohm, ½ W
R29	D-7.103-72	Filter, 470 ohm, 2 W
T1	D-9.263	Power Transformer
T2A	C-9.264	Output Transformer (Model 3A10)
T2B	C-9.265	Output Transformer (Model 3All)
SP1	D-30.337	3.2 ohm, PM Speaker
L1	B-1.556	Bias Oscillator Coil
M1		Pilot Lamp, Type #44
M2		Neon Lamp, Type NE51, Normal Indicator
M3		Neon Lamp, Type NE51, Overload Indicator
M4	B-4.132	Trimmer, Bias Adj. (3-35 mmf.)
M5	C-4.133	Trimmer, Normal Indicator Adj. (3-35 mmf.)
M6	C-4.133	Trimmer, Overload Indicator Adj. (3-35 mmf.)
M7A	B-11.230	Play/Record Switch (Viewed from Rear)
M7B		Play/Record Switch (Viewed from Front)

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	C-13.253	Speed Shift Knob
2		Screw, 6-32 x 3/16 BHMS
3		#6 Cantlink Lockwasher
4	B-13.261	Reel Pan for Feed Reel
5	D-13.264	Rear Escutcheon
6		Screw, 6-32 x 3/16 BHMS
7		#6 Cantlink Lockwasher
8	B-13.262	Reel Pan for Take-Up Reel
9	B-31.330	Reel Drive Spring (Belt)
10	C-13.254	Tone Control Knob
11	E-13.265	Front Escutcheon
12	B-19.858	Push Button Retainer Bracket
13	B-13.258	Push Button (Maroon), 5 Used
14		Screw, 6-32 x 7/16 RHMS
15	C-13.254-2	Volume Control Knob
16	E-13.266	Base Plate
17	B-32.282	Tape Guide Post
18	35.775	Record Lock Lever Assembly
19	B-31.338	Record Lock Lever Return Spring
20		Hex Nut, 6-32
21	B-32.276	Tape Guide Post (Left)
22		Erase Head Adjustment Screw
23		Erase Head Forward Adjustment
24	B-31.346	Erase Head Retracting Spring
25	B-32.260	Tape Guide Post Spacer
26		Hex Nut, 6-32
27	B-32.252	Tape Guide (Right)
28	C-36.156	Recording Head, Shure #TR16A (Model 3A10)
	C-36.157	Recording Head, Shure #TR16 (Model 3All)
29	B-33.409	Hairpin Clip
30	B-28.163	Linen Washer
31	B-33.404	Pinch Roller
32	B-28.163	Linen Washer
33	35.761	Pinch Roller Plate Assembly
34	B-31.336	Pinch Roller Tension Spring
35	B-19.881	Playback Actuating Lever

MECHANICAL PARTS LIST (Cont.)

Ref. No.	Part No.	Description
36	35.758	Playback Slide Plate Assembly
37	B-19.892	Pressure Pad Spring
38	B-33.412	Speed Nut, 3/16 Stud
39	B-19.868	Record Slide Plate
40	B-19.872	Erase Head Plate
41	B-31.347	Erase Head Tension Spring
42	35.766	Record Actuating Lever Assembly
43	B-31.334	Felt Pad
44		Screw (Spring Adjusting) 6-32 x 3/8 RHMS
45	B-31.337	Push Button Return Spring
46	B-19.859	Hinge Bracket for Push Buttons
47		Screw, 6-32 x 1/4 Phillips Rd. Hd. M.S.
48	B-19.870	Locking Plate for Push Buttons
49	B-31.343	Lock Plate Spring
50	B-19.877	Switch Lever (Amplifier)
51	B-31.338	Brake Return Spring
52	C-19.869	Brake Slide Plate
53	B-33.412	Speed Nut, 3/16 Stud
54	B-31.339	Idler Lever Tension Spring
55	35.759	Shift Plate for High Speed Assembly
56	35.774	Record Interlock Spring Assembly
57	B-31.333	Switch Arm Link
58		(Bottom View of Item 16)
59	35.757	Sub-Idler Plate Assembly
60	B-33.405	Sub-Idler Wheel
61	B-28.163	Linen Washer
62	B-33.409	Hairpin Clip
63	35.763	Speed Control Shaft Assembly
64	B-33.406	Idler Drive Sheave
65	B-28.162	Idler Drive Belt
66	B-19.840	Idler Steady Bracket
67	B-32.259	Capstan Shaft
68	35.767	Idler Lever Assembly
69	B-19.844	Brake Arm
70	B-31.335	Brake Pad
71	C-13.257	Flywheel
72	B-28.163	Linen Washer
73	C-19.902	Brake Drum
74		Screw, 8-32 x 1/4 B.H.
75	B-19.863	Drive Mounting Plate Bracket
76	B-33.408	2-1/2" Rubber Bonded Idler
77	B-19.862	Angle Bracket
78		#8 Ext. Lockwasher
79		Screw, 8-32 x 3/8 R.H.
80	C-19.837	Motor Adaptor Plate
81		Washer (Flat), 1/2 x 3/16 x 1/32
82		Lockwasher, Internal #8
83		Screw (Sems), 8-32 x 5/8
84	D-36.153	Motor
85	B-33.418	Truarc Retaining "E" Ring
86		Washer (Flat)
87		Felt Washer, 3/4 x 1/4 x 1/16
88	C-19.887	Fan Blade, 4"
89		Felt Washer, 3/4 x 1/4 x 1/16
90	33.415	Push-on Fastener
91	B-28.159	Shock Mount
92	B-33.409	Hairpin Clip
93	B-28.163	Linen Washer
94	B-19.878	Speed Shift Lever
95		Screw, 6-32 x 1/4 BHMS
96	B-32.264	Idler Slide Bushing
97	35.768	Idler Pulley Switch Slide Plate Assembly
98	B-31.324	Idler Tension Spring
99	B-31.324	Idler Tension Spring
100	B-31.327	Idler Lift Compression Spring
101	B-32.262	Motor Pulley
102		Screw
103		Lockwasher, Internal #8
104		Washer (Flat), 1/2 x 3/16 x 1/32
105	B-19.879	Idler Throw Out Lever
106		6-32 x 1" O.C. Phil. Hd.
107		Felt Washer 3/4 x 1/4 x 1/16
108		Felt Washer 3/4 x 1/4 x 1/16
109		6-32 x 1/2 Phil. Hd. O.C.M.S.
110		6-32 x 1/4 Hex Nut
111		#6 Int. Lockwasher
112		3/8 x 1/8 x 1/32 Flat Washer
113		3/8 x 1/8 x 1/32 Flat Washer
114		#6 Int. Lockwasher
115		6-32 x 1/4 Hex Nut
116		Felt Washer 3/4 x 1/4 x 1/16
117		6-32 x 1/2 Phil. Hd. O.C.M.S.
118		2 x 56 x 3/16 Hex Nut
119		#2 Int. Lockwasher
120	35.756	Perm. Magnet Assembly
121	35.755	Push Button Lever Assembly
122	B-28.163	Linen Washer
123	B-28.163	Linen Washer
124		#8 Ext. Lockwasher
125		8-32 x 3/8 R.H.M.S.
126		8-32 x 11/32 Hex Nut
127	B-19.883	Bracket (Input Jack)
128	B-33.400	Midget Jack
129	B-32.261	Shoulder Washer
130		Flat Washer 1/2 x 3/16 x 1/32
131		#8 Ext. Lockwasher
132		8-32 x 5/16 BHMS
133		6-32 x 1/2 BHMS
134		#6 Int. Lockwasher
135		4-40 x 3/8 O.C. Phil. Hd.
136	B-33.370	Phono Jack
137		4-40 x 1/4 Hex Nut
138	B-23.163	Linen Washer
139		8-32 x 3/16 Allen Hd. Set Screw
140	B-33.409	Hairpin Clip
141	B-28.163	Linen Washer
142		#8 Ext. Lockwasher
143		1/2 x 11/64 x 1/32 Flat Washer
144		8-32 x 3/8 RHMS
145		#8 Ext. Lockwasher
146		8-32 x 1/4 BHMS
147		#8 Ext. Lockwasher
149		#8 Ext. Lockwasher
150		8-32 x 1/4 BHMS
151	8-32 x 3/	8-32 x 3/8 BHMS
152		#8 Ext. Lockwasher
153		1/2 x 3/16 x 3/64 Flat Washer
154	B-33.407-1	"C" Washer
155		#4 x 3/16 P.K. Screw Hex Hd.
156	B-19.916	Spring Clip
157	B-28.163	Linen Washer
158	B-32.261	Shoulder Washer
159		8-32 x 1/4 Allen Hd. Set Screw
160	35.753	Motor & Transf. Mtg. Assembly